November/December 1991 $2.00

MONTANA OUTDOORS

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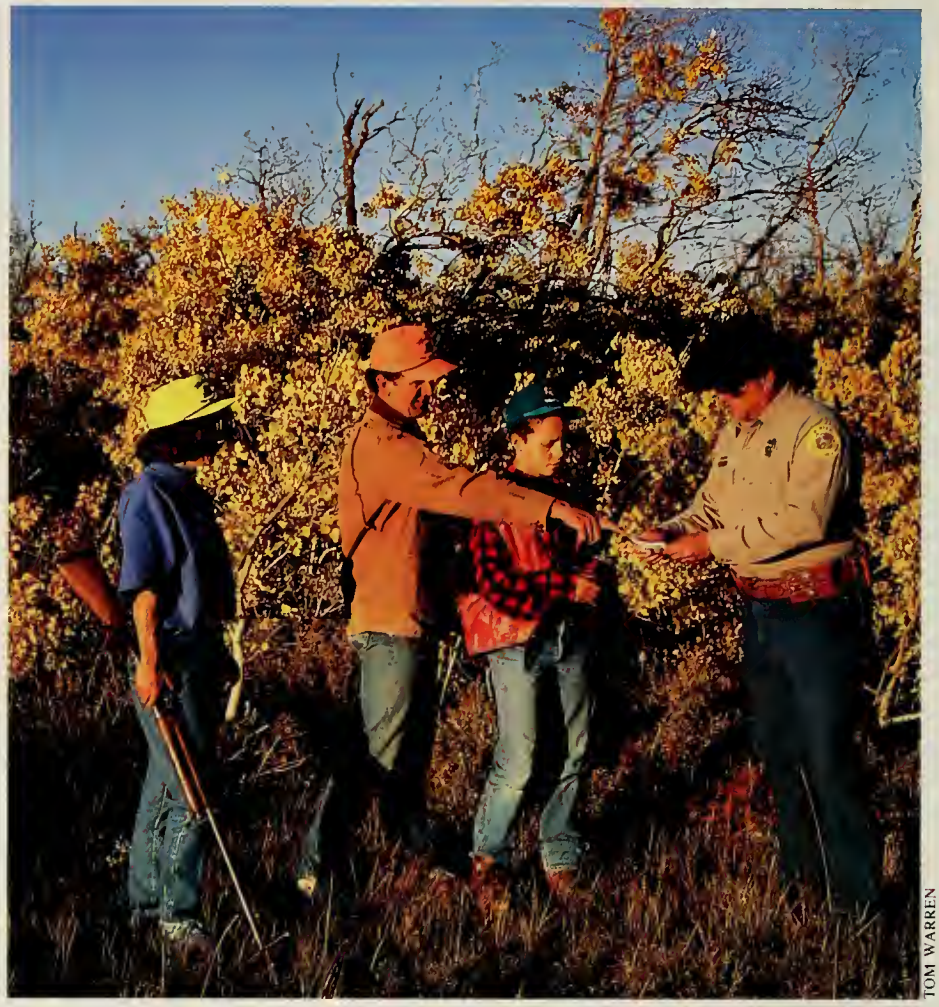
Our Point of View



TOM WARREN

AS THIS ISSUE OF *MONTANA OUTDOORS* goes to press, thousands of hunters are heading afield to share in the results of some of the most progressive and successful wildlife management programs ever developed. From herds of bighorn sheep that are the envy of a nation, to elk populations that excite the imagination of hunters across North America, Montana's game populations are truly magnificent resources that with all good conscience must be held in trust for future generations.

Like all valuable possessions, these splendid resources demand special care. Indeed, if we are to preserve the fruits of our collective labor, we must ensure that they are protected from abuse. That's why those of us who have been afforded the privilege of managing Montana's valuable wildlife resources are now placing an increased emphasis on enforcing those laws enacted to facilitate our management efforts.

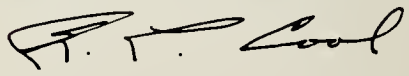
This increased emphasis has been most visible in our heightened efforts to shut down high-stakes, commercial poaching rings throughout the state. Over the last couple of years, a number of this department's undercover, or covert, enforcement operations have received national and international acclaim for the successes they achieved as well as for the skill and professionalism with which our enforcement personnel carried them out.

Yet, our efforts haven't stopped there, and thanks to the 1991 Legislature and the support of many organizations and individuals, Montana's game wardens now have another important tool at their disposal to help limit the loss of our precious wildlife resources to poachers. Call them wildlife decoys, wildlife simulations, or what you will, their primary intent is to provide our wardens with a means to curtail the activities of those who set out to deliberately break the law. This new technology also provides an avenue for responding to recurring landowner concerns about shooting before or after legal hunting hours, shooting near buildings, hunting without permission, and other violations of our wildlife-related laws.

We're confident that our new decoy program will prove itself very valuable, not only because our living wildlife resources won't have to be compromised for those who break the law to be prosecuted, but also because of a decoy's inherent deterrent effect. We hope the very knowledge that decoys are being used by our wardens will cause many would-be poachers to reconsider the wisdom of their ways.

Our new decoy enforcement program can help preserve our wildlife for the enjoyment of all Montanans. But we know the program will never realize its full potential without the support and assistance of landowners, sportsmen, and others simply concerned about the welfare of our resources. The department's toll-free TIP-MONT "Turn In Poachers" hot line remains an easy way for anyone to contact the department when they suspect poachers may be at work or for landowners who wish to see an end to recurring unlawful activities.

Montanans have told us that they want to see our wildlife laws enforced. We'll do our best to carry out that mandate.



K.L. Cool
Director
Montana Department of Fish, Wildlife & Parks

MERLIN D. TUTTLE

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Front Cover—Of her front cover, artist **Audrey Casey** wrote, "I wanted a dramatic setting for this cougar because I see cougars as very dramatic animals. I chose to portray this female cougar...with the boldness of the rock face to complement her beauty and strength." We think you'll agree that her "Skylined—Cougar" is an apt depiction of those cougar attributes (detail from "Skylined—Cougar," artwork courtesy of the artist and Mill Pond Press; Venice, FL 34292-3505).

Back Cover—Helena artist **Shirley Cleary**'s painting is a sensitive interpretation of the theme of Water Awareness Month: "Montana's Water—The Future Is In Your Hands." Celebrate Water Awareness Month in January 1992; for additional information, contact The Montana Watercourse, 406/994-5392.

WATCHABLE WILDLIFE

Big Sky UFOs

by TOM LEMKE
photos by MERLIN D. TUTTLE
BAT CONSERVATION INTERNATIONAL

AS THE LAST RAYS OF SUNLIGHT faded into the warm June night, a varied thrush sang its final song of the day. A black mist net lay stretched across the water of the small forest pond near Thompson Falls in northwestern Montana. The action was about to begin.

Out of the corner of my eye I saw something fly erratically through the alders—the first UFO of the night! Excitement and anticipation filled the air. At about 11:15 the net jumped with movement; I ran toward the pond and turned on the miner's "headlight" strapped to my forehead. Two creatures struggled desperately to free themselves from their delicate but strong bonds.

Were they aliens from another world, unlike all other earthly species, unknown and feared by man, capable of superhuman feats, visitors from the Twilight Zone? Well, actually, yes and no...they were two of Montana's 14 species of bats, and yes they fit the above description very well. But this wasn't a filming session for "Unsolved Mysteries"; instead, as a Department of

Fish, Wildlife & Parks (FW&P) biologist, I was trying to learn more about the distribution and abundance of bats in the Big Sky State.

The first alien "UFO" I examined was a beautiful female long-eared myotis bat with reddish-brown fur and long, delicate, black ears. The long-eared myotis turned out to be the most common bat found in this northwestern Montana habitat. The other struggling "alien" was a Townsend's big-eared bat, a relatively rare bat classified as a sensitive species in Montana by both the U.S. Forest Service and FW&P. I easily identified it by its extremely large ears and pronounced bulbous nose. Both bats, indeed all bats found in the state, feed on insects.

Fourteen species of bats inhabit Montana. Some of them, such as the little brown myotis and big brown bat, are widespread throughout the state, while others, like the California myotis, Keen's myotis, pallid, and spotted bats, have more restricted, smaller ranges. Montana's bats are small animals, weighing half an ounce or less with wingspans ranging from eight or nine inches for most species of myotis up to 16 inches for the hoary bat.

Bats are highly specialized animals in many ways. They are the only mammal capable of true flight. Modified front legs form powerful, lightweight wings with long, thin fingers supporting a tough, leathery wing membrane. Bats can fly long distances at relatively high speeds, and can outmaneuver most species of birds.

Flying at night or inside caves creates obvious problems. Bats navigate using a complex system called echolocation, not unlike sophisticated sonar systems used by marine mammals and navy submarines. Bats emit high-frequency sounds beyond the range of human hearing. These sound waves travel through space, hit solid objects, and bounce back toward the flying bat. Using a unique system of hearing and nerve receptors in the brain, bats "read" these bouncing sound waves and instantly adjust their flight to avoid hitting objects or to home in on minute flying insects.

Flying insects are caught in the bat's mouth or are scooped up in the glovelike tail or wing membranes and immediately grabbed. Feeding is like an aerial night baseball game, played at high speeds in an unlit stadium. A single bat may catch thousands of insects each night. Each species of bat emits its own particular ultrasound frequency. Scientists can determine which species of bats are flying overhead by recording frequencies on an electronic bat detector.

Night-flying insects have also "studied" bat echolocation. Certain moths, lacewings, and praying mantises have developed "anti-bat ears" or sensors capable of detecting bat echolocation calls from a distance of 100 feet or more. The ultrasound sensors may be located on several parts of the insect's body. When the sensors detect a bat signal the insect immediately changes course and goes into an erratic, evasive flight pattern. The result is a dramatic high-tech dog fight in the night sky.

Bats have the lowest reproductive rate of all small mammals. This female hoary bat has given birth to twins, an unusual occurrence in the bat world.

BECAUSE THEY RELY SOLELY ON INSECTS FOR FOOD, bats run into trouble during Montana's long winter. They have two solutions: Some species stay and hibernate in a deep sleep, relying on stored fat, while others migrate south where insects can be found for longer periods. To survive hibernation, many bats spend winter in caves or mines with a relatively constant temperature and humidity. These special sites, known as "hibernacula," are critical to bat survival. Some species may fly several hundred miles to return to historical winter roost sites.

Other species, like hoary and silver-haired bats, migrate seasonally. They arrive in Montana in May or June, spend the summer raising their young, and head south again in late fall. Migratory species may or may not hibernate, depending on their southerly destination, which is typically the southwestern states or northern Mexico.

Montana bats form maternity colonies of less than a dozen to perhaps hundreds of pregnant females that gather to give birth and raise their young away from the males. Maternity colonies are characterized by very warm roost sites in buildings, hollow trees, under loose bark, or in cracks along rocky cliff faces. There is no nest. Females give birth while hanging by their thumbs, head upward, which is the opposite of their normal resting position. The newborn bat, after being caught in the tail membrane and groomed by the mother, quickly crawls upward to one of her two nipples. The young bat remains attached to the breast during the day and can be carried in flight by the mother if she is disturbed. At night females leave the young at the roost, returning several times to nurse them.

Bats have the lowest reproductive rate of all small mammals. Females first give birth at 2 years of age and typically produce only one offspring per year. The young bats grow up very rapidly. Within three weeks they are almost adult-size and begin to fly. When their food-catching skills improve they are quickly weaned and on their own. Bats are most vulnerable to accidents, food shortages, and climatic changes during the first days of life.

WHAT BATS LACK IN PRODUCTIVITY they make up for in longevity. Unlike other small mammals, bats have few predators and relatively few diseases. Snakes, owls, weasels, and skunks may opportunistically kill an occasional bat, but due to their roosting habits and nocturnal behavior, adult bats have low natural mortality. Bats frequently live 10 to 20 years or more in the wild, which is like centuries compared with the short life span of small mammals such as mice, voles, and shrews.

Bat populations nationwide have declined during the last several decades. Many factors are probably involved, including the heavy use of insecticides that accumulate in bats through the food chain, increased human disturbance of cave populations (especially during hibernation), lack of appropri-

Big brown bat

Hoary bat

Spotted bat

Long-eared myotis

Pallid bat

Townsend's big-eared bat

ate roost sites, and intentional destruction of bats by people who fear and misunderstand them. Conservation groups are now focusing on protecting bats through public education, research, and habitat protection.

Bats suffer from one of the worst reputations in the animal kingdom. Myth, mystery, and superstition have led to numerous misconceptions about them (see sidebar). Human fears are proportional to our lack of knowledge about these unique mammals. For example, the odds of being drained bloodless by a vampire bat are *extremely* overrated; bats are neither blind nor do they become entangled in women's hair; and the chance of contracting rabies from bats is no greater than that from dogs, cats, skunks, raccoons, or other common carriers.

At a time when public opinion of once-maligned animals such as snakes, raptors, and wolves has improved substantially, our understanding of bats has lagged behind. Bats are, in fact, the major predator of a wide variety of insects, including moths, plant borers, beetles, gnats, and mosquitoes. Without bats, certain insects would increase dramatically, including a number of species that are considered agricultural pests or major human nuisances.

In tropical areas where bats reach their highest diversity, they play a key role in regulating insect populations, dispersing seeds, and pollinating plants. They help perpetuate many tropical forest species, including several commercially valuable wood, fiber, and fruit-producing plants that find their way into worldwide markets.

There is much yet to learn about bats, including details about echolocation, research into bat reproductive physiology (which has implications for human birth control and artificial insemination techniques), and how young bats successfully migrate to small cave openings they have never been to before.

There has been relatively little field research on bats in Montana. The distribution and occurrence of bats and location of important hibernacula are still poorly understood. In fact, only recently did a graduate study confirm the presence of a breeding population of spotted bats in Montana, ending 50 years of speculation. As public interest increases and new wildlife management priorities surface, our Big Sky UFOs are bound to become less "unknown" and better understood by everyone.■

Bat Conservation International

Bat Conservation International, or BCI for short, was founded in 1982 as a non-profit membership organization to publicize the value and conservation needs of bats, to promote conservation and research projects, and to assist with bat management initiatives worldwide. BCI now boasts more than 10,000 members and is regarded as the world's leading bat resource center. Current projects include educational slide shows for schools, encouraging people to build bat houses, protecting important bat caves, and saving endangered fruit bats or "flying foxes" on Pacific Ocean islands. For more information on bats, bat house building plans, or memberships, write: Bat Conservation International, P.O. Box 162603: Austin, TX 78716.

For More Information...

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"The Bats of Colorado," Division of Wildlife, Colorado Department of Natural Resources, 6060 Broadway; Denver, CO 80216, 1984.

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Bat Myths and Bat Facts

Myth: Bats are filthy, aggressive animals that love to fly into women's hair.

Fact: Bats are actually gentle, shy, clean animals that spend a great deal of time grooming and cleansing their fur. They tend to avoid people.

Myth: Bats are blind.

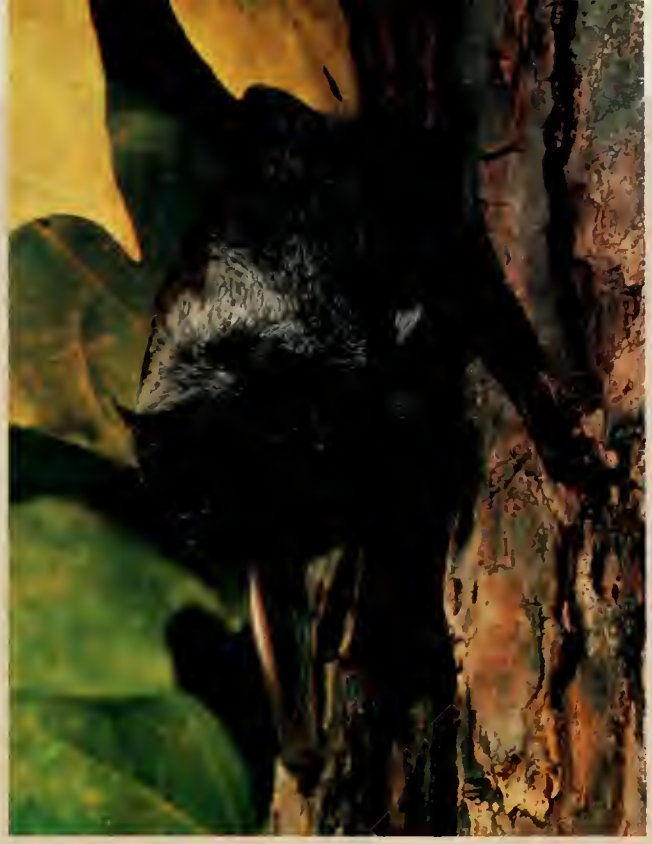
Fact: Bats have eyes and use them to see close objects. They fly in the dark using a sophisticated system called echolocation, similar to sonar, which enables them to detect obstacles as fine as human hair.

Myth: Bats are dangerous; vampire bats will attach themselves to you and suck out your blood.

Fact: All bats that live in the United States feed on insects, nectar, or pollen. Three species of vampire bats are found in the American tropics. They specialize in biting cattle, wild mammals, and birds, and lapping small amounts of blood from the wounds. Two of the species are extremely rare. Vampire bats seldom come in contact with humans and do not kill people.

Myth: Most bats are rabid, and they are the most important reservoir for rabies.

Fact: Like most mammals, bats can contract rabies. However, the incidence of rabies among bats is extremely low and no greater than the incidence of rabies in other wild animals. Studies of thousands of bats indicate that less than half of 1% of bats contract rabies. When they do they become paralyzed and die quickly. Unlike rabid dogs, cats, skunks, and raccoons, infected bats seldom become aggressive. Even with this knowledge, people should never attempt to handle a bat that appears sick or is unable to fly.



The silver-haired bat is a forest species that commonly roosts in tree cavities, under loose bark, or in wood piles.

Myth: Bats are a type of night-flying bird or closely related to birds.

Fact: Bats are mammals. They have hair instead of feathers, give birth to well-developed young instead of laying eggs, and feed their young with milk. Recent studies indicate that bats may have evolved from early primate ancestors, making them more closely related to humans than previously thought. About 900 species of bats occur worldwide; 40 species are found in the United States. As mammals they are second only to rodents in species diversity.

A Check List of Montana Bats

California myotis *Myotis californicus*
Small-footed myotis *Myotis leibii*
Yuma myotis *Myotis yumanensis*
Little brown myotis *Myotis lucifugus*
Long-legged myotis *Myotis volans*
Fringed myotis *Myotis thysanodes*
Keen's myotis *Myotis keenii*
Long-eared myotis *Myotis evotis*
Silver-haired bat *Lasionycteris noctivagans*
Big brown bat *Eptesicus fuscus*
Hoary bat *Lasiurus cinereus*
Spotted bat *Euderma maculatum*
Townsend's big-eared bat *Plecotus townsendii*
Pallid bat *Antrozous pallidus*

—from Thompson, L.S., "Distribution of Montana Amphibians, Reptiles and Mammals," Montana Audubon Council, 24 pages, 1982.

GRAPHIC BY MARTHA LONNER

Under

story and photos by MICHAEL R. FRISINA

I FOUND MY WAY to China during the summer of 1990 as a member of a North American grassland management delegation invited by the Chinese Ministry of Agriculture. The Chinese government organized the trip through the People to People Citizen Ambassador Program as part of an ongoing effort to modernize agriculture. Our purpose was to meet with land management professionals, herdsmen, and farmers to exchange information and to discuss grassland management.

It took many days of arduous travel by plane, train, and bus, often over primitive roads, to reach the Inner Mongolian Autonomous Region of the People's Republic of China. After such a trip, it was a surprise to feel at home. This vast, remote region, with a long history and rich culture, is inhabited by a people with an independent life style tied to the land and its natural resources. In many ways, it is similar to Montana. Montanans are proud of their "land of the Big Sky"; the Chinese refer to their country as "everything under the sky."

THE INNER MONGOLIAN AUTONOMOUS REGION is a vast area lying between the Great Wall and China's northern border, extending over 1,500 miles from east to west and over 1,000 miles from north to south. Most of Inner Mongolia is a high, relatively flat plateau about 5,000 feet above sea level.

The climate is similar to that of southwestern and eastern Montana, with scanty rainfall and dramatic changes in temperature. Winters are long and cold (five to six months) with short, warm summers. There are frequent strong winds and more sunny than cloudy days. As in Montana, January is the coldest month.

Vegetation produced on this vast expanse of grassland (over 35.6 million acres) provides forage and habitat for a variety of wildlife and livestock utilized by the native peoples. Of nearly 1,000 plant species, livestock favor about 600 as forage. These include native Mongolian plants introduced to North America, like crested wheatgrass and Caragana. However, some of the native Mongolian vegetation favored by livestock is similar to that of Montana, such as fringed sagewort which is quite common (same species as in Montana) and wheatgrasses similar to our western and bluebunch wheatgrasses.

A variety of wild herbivores, including red deer, moose, wild sheep, and antelope, share the grasslands with domestic livestock. A number of predators are present, as well as more than 300 species of birds, including large eagles similar to our golden eagles.

Visiting the grasslands of Inner Mon-

the Same Sky

The Great Wall of China forms the southern boundary of the Inner Mongolian Autonomous Region.

golia answered a question I have pondered for years—what did the grasslands of Montana look like before fences? As far as one can see, the landscape is a sea of grass. It reminded me of Montana east of the Continental Divide without fences.

WHILE WE WERE PREPARING TO BOARD THE TRAIN from Beijing to Hohout, one of our Chinese interpreters told me we would fit in well with the Mongolians, "...they are a lot like North Americans...independent and free-willed." This heightened my interest in seeing the land and meeting its people.

The Mongolian Plateau is a romantic land with a long history. During the 12th century, Genghis Khan united the nomadic tribes of the Eurasian steppe and conquered China and eastern Europe to form one of the largest land empires in world history. The descendants of this great empire are a proud people who maintain a semi-nomadic life tied to maintenance of herds of sheep, goats, horses, and cattle on their extensive native grasslands.

Western North Americans and Mongolians share the common bond of the horse influencing development of their way of life. On his Mongol pony and dressed in bright multicolored traditional garments, the herdsman strikes a romantic image rivaling the American cowboy. These are proud and proficient horsemen, with small but sturdy horses adapted to the needs of their nomadic masters. The Mongolian pony once was feared by the Chinese as Genghis Khan's "super weapon" and was reputed to "sweat blood" during the heat of battle. It was in this part of the world that devices like the stirrup were first developed.

Mongolian culture has developed around the necessity of being nomadic. Homes are small, portable tents which westerners call yurts. They consist of a circular, collapsible pole structure covered with felt that can be easily disassembled to move with the herds. The tents are often colorful and contain the usual comforts of home. Inside is a small stove used for cooking and heating and some even have small, portable wind generators for electricity. Animal dung is used for fuel, since there is no wood.

During summer and fall, most Mongolian herders live in portable tents called "yurts" (above). At mealtime, they enjoy traditional foods like goat cheese and fresh mare's milk mixed with millet and butter.

Today, most herders live in these structures from summer through fall and spend winter tending their flocks from villages where they live in small brick and adobe homes. They use portable pens, woven from dried vegetation, to separate and control livestock. Unlike methods employed by American stockmen, all techniques of animal husbandry are portable because, except for winter, the livestock herds are continually on the move. Some herdsmen use small motorcycles to visit neighbors or nearby villages.

At mealtime, people sit on the floor around the tent stove and share traditional food and drink made from products of the grasslands. For feasts, they often prepare fat-tailed sheep. The special breed of sheep is roasted whole, and its fat is considered a delicacy. Combined with the traditional drink of distilled and fermented mare's milk—called grassland beer (20 to 30 proof)—this meat results in a festive mealtime. They also traditionally serve warm milk tea and fresh mare's milk mixed with millet and butter. Goat cheese is also common.

It is a favorite custom to visit, sing songs, and share food and drink with friends. Our delegates were openly accepted as friends and we will remember forever the hospitality extended to us by our Mongolian hosts.

WHEN ASKED HOW LONG the lands have been grazed, a native herdsman proudly proclaimed as he pointed at the ground,

See MONGOLIA, page 13

SAFETY EDUCATION PROGRAMS NEED YOUR HELP

Approximately 1,000 volunteer hunter and bowhunter education instructors across Montana receive only the satisfaction of knowing that what they're doing is likely the most important effort anyone is making to ensure continuation of hunting in Montana and the safety of the state's sportsmen and sportswomen. Many of these instructors use their own equipment when teaching their classes, and some don't have everything they need.

You can help!

The Hunter Education and Bowhunter Education programs need firearms and archery equipment. You can donate a firearm or bow (functional or non-functional) to the program and receive a receipt documenting the contribution which then may be used for tax purposes. All donated equipment will be inspected for safety and distributed to instructors throughout the state.

"We feel it's important for each student to be able to handle and operate many different types of firearms and archery equipment," said Tim Pool, supervisor of the education programs. "Many of our instructors have limited supplies and types of equipment. Donations will help increase the variety of equipment available to the student, as well as reducing the possibility of damage to an instructor's personal equipment."

Pool emphasized the donation program is a good way for people to get rid of unwanted, damaged, or non-functional firearms and archery equipment. "What better way for unwanted guns and other equipment to be disposed of than to be used for educating and safety training our youth. This is one way to give something back to a sport that gives so much to all of us."

Montana's Hunter Education Program has been in existence for over 34 years, while the state's Bowhunter Education Program began as a volunteer program in 1976 and became mandatory in 1988. The basic premise of both programs is to instill in youngsters the knowledge and skills to be safe, ethical, responsible hunters and good stewards of the sport of hunting.

For more information about the firearm and archery donation program, contact a hunter/bowhunter education instructor in your area, the nearest Fish, Wildlife & Parks office, or the Hunter Education Program office at 1420 East Sixth Avenue; Helena, MT 59620 (406/444-2535).

HEALTHY TABLE FARE

Montanans are well known for their love of "grown in Montana" beef and other red meat products. Yet, each fall many freezers fill up with game meat—deer, moose, elk, pheasant, grouse, and duck—all of which provide a tasty, healthy variation from more traditional fare.

Elk and venison are even lower in total fat than turkey and provide a richer source of iron. When the amount of fat in meats is determined, most Montana game meat has relatively little fat. Game for example, has only half the fat of skinned chicken while providing three times the iron.

Moose, antelope, elk, deer, pheasant, and grouse are low in fat. Bear, goose, and duck are considerably higher, and all organ meats, such as heart and liver, whether from wild or domestic animals, contain high levels of cholesterol.

To help you compare the fat content of various meats, the percentage of fat found in game and in domestic meats is listed. When cooked meat values are not available, the percentage of fat in the raw meat is listed (raw meat generally has more fat than cooked meat):

GAME: Elk and venison, 2.2; moose, 2.8 (raw); buffalo, 3.6; bear, 9.4 (raw); duck, 15.8 (raw); upland game birds and pheasant, 4.0 (raw).

DOMESTIC: Round steak, 7.0; T-bone, 12.0; lean ground beef, 20.0; ham leg, 12.0; duck, 28.6 (raw); skinned chicken, white meat, 5.0; skinned turkey, white meat, 3.0; skinned turkey, dark meat, 11.0.

If you butcher your own meat, take care to remove any bloodshot areas which can greatly affect the flavor of the meat. Appropriate wrapping paper is important to prevent the meat from drying out, and double-wrapping also helps ensure the quality of the meat.

Elk or deer can be substituted for beef in most recipes without making any other alterations. Game meats are often drier than their domestic equivalents, but fats need not be added to make the game tender and flavorful. Many recipes are available using wine and tomato sauces, which tenderize and moisten the meat without added fat.

An enjoyable alternative for red game meat is making sausage—breakfast sausage, thuringer, salami, and others. Ask your butcher to use no more than 10% fat in making the product. This creates a low-fat sausage acceptable for occasional use with almost any fat-modified diet. Most meat markets are willing to make sausage to your specifications.

Pheasant, Hungarian partridge, and grouse provide the palate with a light flavor and are a healthy alternative to their higher-fat cousin, the chicken. Skin the birds and roast them on a rack or cook in a wine-based sauce rather than stuffing them.

When cooking wild duck or goose, roast on a rack to allow the fat to drip from the meat. Or skin and cook in a sweet and sour sauce. Keep in mind that even wild goose and duck have four times the fat of Hun and pheasant. The legs of game birds tend to be tougher and bonier than the breast, but can be used effectively in soups and stews.

When properly prepared, game provides an enjoyable and healthy alternative to your weekly menu plan.—*adapted from "A Healthy Outlook," by Carla Cox, The Missoulian*

FOR SALE: "EARLY BIRD" STATE PARKS PASSPORTS

Montana State Parks is again offering a deal to satisfy the "bargain hunter" in all of us—the early bird state park passport. The state parks passport is an annual pass that admits one vehicle and the occupants to all designated fee areas within the state park system. If you purchase yours from November 30 through February 14, you'll save 20%. The early bird price is $12 for the first vehicle, and $6 for the second vehicle, if both passports are purchased at the same time.

Passports bought during the November 30-February 14 period are valid immediately if permanently affixed to the vehicle's interior lower left windshield.

An early bird passport is a great holiday or birthday gift suggestion for anyone who enjoys Montana's outdoors. To purchase one, contact any regional Fish, Wildlife & Parks office.—*Debbie Cheek, field support supervisor, Parks Division, Helena*

"THE PARADISE BELOW"

"The Paradise Below" brings the Lewis and Clark Caverns into your living room.

If you've never visited the caverns or you would like to purchase a unique gift for someone who can't tour this natural wonder, a professionally produced 28-minute video is now available. The tour takes you through Montana's geological history, the uplifting of the Rocky Mountains, and the birth of a cave system. A century of caverns history will help you better understand the changes it has endured and the problems it now faces. This exceptional video gives you the feeling of being there.

"The Paradise Below" was produced in partnership with Margaret Kochman, a member of Montana's State Park Futures Committee and her company, the North Country Media Group, Great Falls. Profits from sale of this informational and educational tape go directly to Lewis and Clark Caverns State Park which has extensive maintenance needs. State Parks managers have begun to employ unconventional methods—such as video sales—to bolster operation budgets for the financially strapped state park system.

The video is available at all regional department offices; to order a copy by mail, send $19.95 plus $2.40 postage and handling ($22.35 total) for each video to Lewis and Clark Caverns, "The Paradise Below," P.O. Box 949; Three Forks, MT 59752.—*Debbie Cheek, field support supervisor, Parks Division, Helena*

NATIONAL PRO-HUNTING ALLIANCE LAUNCHED—Montana Gov. Stan Stephens (center) was presented an honorary "Membership No. One" in the newly organized, national pro-hunting group, The Hunter's Alliance. The group will be headquartered in Montana but will work nationally on hunting issues.

Gov. Stephens and Jim Zumbo (left), hunting editor of Outdoor Life, *were key speakers at a kick-off luncheon in Helena at which the organization was officially launched. Dale A. Burk (right), executive director of The Hunter's Alliance, noted in presenting the governor his membership, that it was most appropriate that the governor, a non-hunter, not only recognized the positive role of hunting today, but was willing to publicly speak up for hunting in the face of threats to the sport in the state and elsewhere.*

The Hunter's Alliance also sponsored a Hunting Congress, an event it hopes to take to every state as a means of communicating hunting's historic and contemporary role. In Montana, the group conducted an 11-city fund-raising and membership-building tour, featuring elk and deer hunting seminars by Zumbo. Those interested in membership or learning more about the organization can reach The Hunter's Alliance at 205 Main Street; Stevensville, MT 59870 (406/777-2521).

Book Review

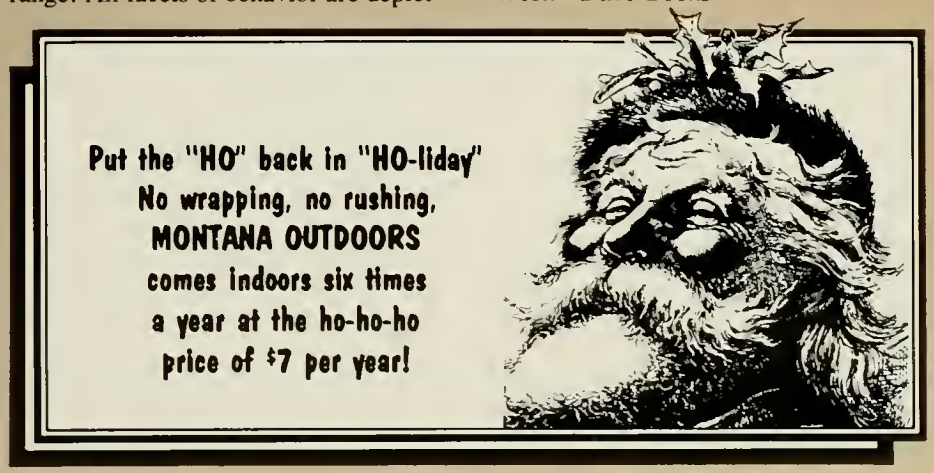
MULE DEER COUNTRY, by Valerius Geist, photography by Michael H. Francis, NorthWord Press, Inc., P.O. Box 1360, Minocqua, WI 54548; 1990, 176 pages, hard cover, $39.

A successful marriage of pictures and text, this large-format book is as compelling to read as it is to look at. Author Valerius Geist, professor of environmental sciences at the University of Calgary in Alberta, Canada, is a leading authority on mule deer behavior and ecology. Billings resident Michael H. Francis, one of Montana's finest wildlife photographers, spent two years photographing mule deer throughout the West to obtain the 150 images that appear in "Mule Deer Country."

The text stands alone as a useful compendium of mule deer evolution, anatomy, feeding habits, survival strategy, and breeding behavior. Did you know, for example, that the mule deer is a relative newcomer on the North American scene, a descendant of the much older white-tailed deer? And that despite its current abundance, the mule deer may nevertheless be a species marked for extinction? The last chapter, entitled "The Mule Deer's End?", is an intriguing discussion of factors that may ultimately bring about the mule deer's decline. No one can be certain, of course, what the future holds for the mule deer, but Dr. Geist's concerns are logical and thought-provoking.

Michael Francis' stunning photographs show the mule deer in all seasons and in many habitats throughout its range. All facets of behavior are depicted: feeding, resting, escaping predators, sparring, courting, and rearing young. It's obvious that Francis practically lived with mule deer for many months to get the quality and variety of photos that appear in the book.

"Mule Deer Country" is a rare blend of science and aesthetics—it belongs on the reference shelf or on the coffee table, and will be of equal value to hunters, natural history buffs, wildlife professionals, or anyone who loves the West.—*Dave Books*


Put the "HO" back in "HO-liday"
No wrapping, no rushing,
MONTANA OUTDOORS
comes indoors six times
a year at the ho-ho-ho
price of $7 per year!

Mongolia

Continued from page 10

"My ancestors and I have grazed this very place for at least 1,500 years." Such a statement helps put survival tied to good land management in perspective. It reaffirmed that through careful management, livestock grazing can be maintained on the land over time, and this same land can also support a long-term and productive vegetative resource.

Both Inner Mongolia and Montana are facing a critical point in rangeland management, but in different contexts. In many ways, our problems are mirror images of each other: our current national controversy over grazing on public lands, and China's policy of settling the nomadic peoples.

Faced with the need to feed a burgeoning population, China is seeking to increase production by imposing the western system of settlement on a long-lived system that succeeds precisely because of the co-evolution of the nomadic people and the land. Forcing this settlement promotes continuous season-long livestock grazing, which is the form of grazing that created most of the grazing management problems faced by western land managers. Where this superimposed system is applied without consideration for the range conditions and methods that maintain it, the range is bound to deteriorate.

The western United States has been faced with imposition of livestock grazing methods designed for European lands and the deterioration resulting from a lack of adaptation to the arid conditions of the West. Most of this deterioration occurred on the western rangeland before 1900, and modern range management methods based on applied plant ecology were developed to alleviate this problem. Where used, modern range management is effectively correcting these problems; for example, one can see positive results on many of the Department of Fish, Wildlife & Parks' wildlife management areas. Working with stockmen to maintain livestock in well-managed grazing systems is critical to maintaining Montana's wildlife, since about half the state is privately owned and used primarily for agriculture. So wildlife production in Montana is a partnership between government and private enterprise. Only by working together can we maintain the western life style we all cherish.

The Chinese have an advantage because, unlike settlement of the American West, they have native peoples with domestic livestock breeds and grazing methods adapted to the land and proved by time. They have only to draw from the knowledge of the Mongolian herdsmen.

Whether yours is the "land of the big sky" or "everything under the sky," it doesn't change the fact that we all live under the same sky. Our mutual survival depends on wisely managing the world's grasslands.■

CONTRIBUTORS

• Aliens from another world, unlike all other earthly species, unknown and feared by man, capable of superhuman feats, visitors from the Twilight Zone. Montana has 14 species of bats, and the description above fits pretty well. But biologist **Tom Lemke** is out to debunk some of the myth, mystery, and superstition surrounding the bat. He's trying to learn more about their distribution and abundance, and he points out that they prey on a wide variety of insects, including moths, plant borers, beetles, gnats, and mosquitoes. "Without bats," he writes, "certain insects would increase dramatically, including a number...considered agricultural pests or major human nuisances." Lemke is a biologist with the department in Livingston. He did his Ph.D. dissertation on bats in Colombia and also spent two years studying fruit bats in the Northern Mariana Islands in Micronesia. Turn to this issue's installment of "Watchable Wildlife" on page 2 and learn more about these "Big Sky UFOs." Photos for the article came from Merlin D. Tuttle of Bat Conservation International in Austin, Texas.

* * * * *

• The purpose of the trip was to meet with land management professionals, herdsmen, and farmers to exchange information and to discuss grassland management. That's exactly what **Michael R. Frisina** did in the Inner Mongolian Autonomous Region of the People's Republic of China. The Chinese government organized the trip through the People to People Citizen Ambassador Program as part of an ongoing effort to modernize agriculture. As Frisina writes, "This vast, remote region, with a long history and rich culture, is inhabited by a people with an independent life style tied to the land and its natural resources." He notes that we are proud of the "land of the Big Sky," while the Chinese refer to their country as "everything under the sky." His conclusion is that we are all "Under the Same Sky" and the Mongolian herdsmen have many valuable lessons to share. His article begins on page 8. Frisina is a wildlife biologist for the department in Butte; he is also the Wildlife Division's statewide range manager.

* * * * *

• Montana is home to one of the most adaptive and effective predators on this planet, "The Cat With Many Names." Depending on where you find it, this champion predator is called cougar, puma, mountain lion, catamount, painter, and panther. Its scientific name translates into "cat of one color," separating it from the many "spotted cats" such as the jaguar, ocelot, lynx, and bobcat. Beginning on page 15, **Shawn J. Riley** provides some fascinating information about the cougar, including the fact it once enjoyed the greatest distribution of any land mammal in the Western Hemisphere. He also notes that even though it was once hated and relentlessly killed for bounties, it has gained favor in society and also regained much of its historical habitat in Montana. Riley is a wildlife biologist with the department in Kalispell. For six months in 1991 he was on special assignment in the Wildlife Division office in Helena to review mountain lion management.

* * * * *

• Although *Montana Outdoors* readers probably link the name of **Mike Logan** with the word "photographer," his "Perspectives" on page 22 once again proves he is equally talented as a writer. He writes about "An Endangered Species," the sport hunter. He writes, "I have felt the two-edged, frost-sparkled sword of northern winter. I have thrilled at the bull elk's bugle in the autumn's shimmering gold. I have startled at the wing-tearing roar of mallards cupped and swarming in before the blizzard's lash." Logan recently retired from the Helena school system. His photograph of a bull elk appears on current posters advertising the Rocky Mountain Elk Foundation's banquets in the United States and Canada. Logan also devotes considerable time and energy to writing and reading his cowboy poems. He was the host and emcee at the National Cowboy Poetry Gathering in Elko, Nevada, in 1989 and 1991. His timely and thought-provoking prose begins on page 22 and is accompanied by his photography.

* * * * *

• **Mike Thompson** is convinced that a wildlife management area properly managed is "Still A Good Idea." His chapter of "Lands Legacy" beginning on page 27 is about the Blackfoot-Clearwater Wildlife Management Area, and after you read it, you'll agree with his thesis. As he writes, "In the face of ever-changing public attitudes at state and national levels, Montana's Blackfoot-Clearwater Wildlife Management Area exemplifies the public's enduring commitment to wildlife restoration and conservation." The area provides critical winter range for about 1,000 elk and 1,500 mule and white-tailed deer. He emphasizes the remarkable spirit of cooperation between the department and adjacent ranching operations and the ensuing benefits for the area's wildlife. Thompson is a wildlife biologist with the department in Missoula.

* * * * *

• Maybe it's a superfish. Maybe it's a serpentlike monster. But whatever it is, "This Is Not Just Another Fish Story." Turn to page 32 for **John Fraley's** report on the Flathead Lake monster. He's traced more than 70 sightings, some from as long ago as 1889. While he carefully avoids swaying your judgment with his, he does present an in-depth look at a creature that has piqued the curiosity of thousands of people throughout Montana and elsewhere. Fraley is the department's information officer in Kalispell. He wishes to thank those who came forward with their monster tales and to especially acknowledge Paul Fugleberg, monster expert and former editor of The Flathead Courier, for help with article research.

* * * * *

• *MO* thanks the following photographers and artists for their contributions to this issue: **David R. Armer**, San Francisco; **Shirley Cleary** and **Mike Logan**, Helena; **Diana Haker**, Worden; **Dan R. Helterline and Martha Lonner**, Bozeman; **Dave McGee**, Great Falls; **Bill Swanson**, Kalispell; **Merlin D. Tuttle**, Bat Conservation International, Austin, Texas, and to **Audrey Casey** and **Morten Solberg**, whose work appears courtesy of the artists and Mill Pond Press. Thanks also to the following contributors who work for the department: **John Fraley** and **Barbara Thomas**, Kalispell; **Michael R. Frisina**, Butte; **Bill Thomas** and **Mike Thompson**, Missoula; **Tom Warren**, Helena; and **Harry Whitney**, Bozeman.

DAVID R. ARMER

THE CAT
with many names

by SHAWN J. RILEY

"PREDATION BELONGS IN THE EQUATION of life," Paul Errington wrote a quarter of a century ago in his classic, "Of Predation and Life." In the wild, predation—one animal killing and feeding on another—is as natural as anything could be. Montana is home to one of the most adaptive and effective predators on this planet, the cougar. Once hated and relentlessly killed for bounty, the cougar has gained favor and regained much of its historical habitat in Montana as society has changed its views on both predation and predators.

Depending on where you find them, cougars are also called puma (the native Peruvian name), mountain lion, catamount, painter, and panther. *Felis concolor*, the puma's scientific name, translates into "cat of one color." A tawny coat separates the cougar from the many "spotted cats," such as the jaguar, ocelot, lynx, and bobcat, with which the cougar shares its range. The cougar once enjoyed the greatest distribution of any land mammal in the Western Hemisphere. It was found from British Columbia to Tierra del Fuego on the southern tip of South America. Before European settlement of this country, the cougar was found all across North America, except on the open prairie along the Great Plains. Since the early part of this century, the cougar's range has been restricted to secure habitats in the mountainous west. A remnant population of a member of the cougar family, the Florida panther, is holding on by a

Once relentlessly killed for bounty, the cougar has regained much of its historical habitat in Montana.

very thin thread in Florida.

As demonstrated by its once vast geographical range, the cougar can live in a broad range of habitats, from alpine mountains to lowland jungles. The list of prey on which the cougar exists is equally varied: mice, rabbits, beaver, and grouse. The cougar is one of the few predators that worries the well-defended porcupine. The cougar dexterously flips the porcupine over, exposing its soft belly. However, in Montana and in most of the West, cougars are ubiquitously tied to deer and elk.

COUGARS SHARE CERTAIN TRAITS with others of the cat family that suit their predatory life style. They have short, robust legs and small lungs adapted for stealth and short sprints rather than long chases. Their short, flat noses suggest that the sense of smell is none too keen. But what they lack in smell they more than make up in eyesight; their large eyes are are close together for acute, stereoscopic vision. Their night vision is enhanced by a mirrorlike layer of tissue (the tapetum, pronounced ta-PEE-tum) behind the retina. That greenish-gold shine reflected from its eyes when a cat is captured in a headlight is light reflected from the tapetum. The narrow, vertical slit that you think of when you think of a cat's eye—and the valuable marble named after it—is actually the pupil closing up in daylight to protect the elaborate adaptations for vision.

Cougars also have fewer teeth than other mammals. Those remaining are highly specialized for killing and consuming prey. The canines, or fangs, are massive and built for delivering a lethal bite. The cougar's molars have little flat surface for grinding or crushing. Rather, the premolars and remaining molar, called carnassials, have taken on shapes like shears, and they are designed for cutting through flesh and tough tendons. Cougars digest flesh easily, without the long, elaborate process required by the systems of animals eating vegetation (herbivores). Like many true carnivores, the cougar has a highly stretchable stomach and esophagus, allowing it to feed less often, but in greater single quantities than its herbivore counterparts. This prevents them losing their kill to other predators or scavengers.

An adult cougar weighs between 80 and 180 pounds depending on sex and age, but it is able take prey as much as five times its size. This sets it apart from other cats which take prey their own size or smaller. The African lion and Asian tiger, weighing up to 400 pounds, most often feed on antelope and zebras weighing approximately the same as they do. The cheetah, one of the few cats built to outrun its prey, concentrates on even smaller antelope species. The lynx and bobcat are adapted to prey species such as hare, grouse, and fawns. The common house cat takes prey a fraction of its size. It is not uncommon, however, for an adult cougar to take down a mature bull elk weighing 500 pounds or more, and kills of 1,000-pound Hereford steers have even been recorded!

Cougars are strictly solitary creatures, except for a period of courtship and breeding when the male stays with the female. Cougars are one of the few wild animals that breed at any time of the year. In Montana, most of the breeding occurs in winter and spring, with the peak time of birth in summer. The male contributes nothing to raising the offspring.

Two or three spotted cubs—sometimes called kittens—are born after a gestation period of 90 to 92 days. The cubs weigh less than a pound at birth, but quickly put on weight; when they are weaned at three months, they weigh between 10 and 15 pounds.

Cubs are given their first taste of meat when they are a month old, and soon after begin forays with their mothers. Like house cat kittens, these cubs spend a great deal of time playing. This play helps hone the skills they will need to survive as predators in the wild. By the time they are weaned, the cubs are accompanying their mothers on hunting excursions, and even make half-hearted attempts at stalking and killing their own prey. When they are between 18 months and 2 years old, the cubs are separated from their mothers and left to fend for themselves. Most researchers think the mother merely leaves the cubs behind, as if to go off on another hunting excursion. The time immediately following this family break is crucial in the survival of juveniles. They depend on rodents and other small mammals until they become adept at taking larger prey. Litter mates often stay together for a while, explaining why many people see two or more cougars traveling together. But before long, the young cougars set out on their own to hunt in the solitary, silent, secretive manner required to stalk their prey.

Cougars are territorial. Each animal stakes out a home area, leaving scent along boundaries that are inactively defended. The cat pulls together a four- to six-inch mound of dirt and forest litter ("scrapes") and deposits its urine or dung. The territorial boundaries are determined more by mutual avoidance of each other than by an aggressive defense of space. An animal whose survival is so keenly tied to its ability to down large prey cannot afford injuries from fighting with another of its own

BY FIRELIGHT—MOUNTAIN LION *by Morten Solberg. Artwork courtesy of the artist and Mill Pond Press, Venice, FL 34292-3505.*

species. Territoriality distributes cougars across the landscape and also serves as a built-in, density-dependent mechanism for population control—there is an upper limit as to how tightly cougars can be packed into an area. Most females will not breed until they have established a territory.

The territories of males are larger than those of females, and generally encompass portions of several females' territories. In Montana a typical male's territory encompasses 50 to 150 square miles, while that of a female would be smaller than 50 square miles.

Another vital mechanism in population control of cougars is a phenomenon called dispersal. This happens when young set out on their own, in search of their own home area. Females are more likely to try and establish themselves adjacent to their maternal home areas, while males disperse more randomly, often traveling long distances before finding a suitable vacant territory. One cougar marked in a research project in the Big Horn Mountains was subsequently shot some years later by a hunter west of Denver—a distance of over 300 miles!

These transient cougars serve an important function because they act as delayed recruits into the cougar population. By being nomadic they assure that any unoccupied territory will soon be filled. In this manner, they should be viewed as more than a surplus by-product of the population. Unfortunately, these individuals are the also most likely to come into conflict with humans. Because of the tendency for mature cougars to avoid humans, a dispersing young cougar may perceive that areas occupied by humans are places to establish a territory. The potential for a run-in with humans or their property then becomes great and a conflict may arise. In Montana, subadult cougars have been responsible for 80% of the known human-cougar confrontations.

MAKE NO MISTAKE ABOUT IT, any animal capable of killing a fully grown elk on the hoof is potentially dangerous to humans. Attacks on humans have increased across the western United States and in Montana. A child was fatally mauled near Evaro, Montana, in 1989,

and another attack on a child in Glacier National Park in 1990 ended less tragically. About 50 attacks on humans have been recorded in the past 100 years in North America, causing 10 fatalities. Nine of the 10 victims were children. British Columbia has accounted for 38% of the attacks; until recently, Montana had no such incidents.

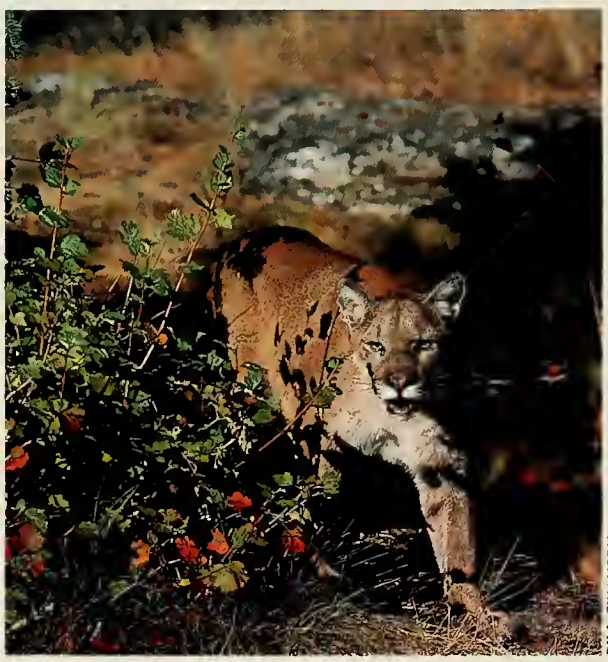
Nationally, the chance of being killed by a cougar is 800 times less likely than being killed by lightning, and 200 times less likely than being killed by a domestic dog. When living in cougar habitats, however, those odds greatly increase. And like precautions one would take on a golf course during a thunderstorm, there are ways to minimize the chance of a cougar confrontation (see sidebar).

DEER AND ELK ARE THE MAINSTAYS of the cougar's diet in Montana, and research is enabling biologists to better understand the cat's impact on game populations. Most findings suggest that cougar depredation is not as detrimental as had once been believed. Availability of prey controls the numbers of predators more than predators control the numbers of prey. In other words, flourishing deer populations generally mean abundant cougars. Cougars can have a suppressing effect on deer populations, but it generally occurs when those deer populations were already heading downhill because of habitat deterioration or other causes. When natural prey populations plummet, for whatever reason, cougars are apt to switch to preying upon livestock.

Animal damage control agents have not had to spend a lot of time on cougars in Montana. Reported livestock depredation has been low compared with most other western states. The most severe problems in the Rocky Mountain West occur where the early turnout of stock into mountainous terrain coincides with young cougars dispersing from their maternal home ranges. The conflict can be further compounded because summer is also the time when female cougars are nutritionally stressed by having to support newborns. Sheep are the most common victims, followed by cattle, goats, and horses.

Many researchers have identified beneficial effects of cougars on prey populations and their habitats. The presence of cougars often disperses large mammals over their ranges and prevents their deleterious concentration on a small portion of their habitat. Whereas cougars take the young, old, weak, and sick, they generally only kill these animals in proportion to the existence in the population. Predation has been an important driving force in the ecology and evolution of the prey species, and science is only now beginning to understand its full significance.

At one time, wolves may have at least limited the distribution of these cats to areas of dense cover. Wolf researchers in the North Fork of the Flathead River drainage have documented wolves killing several cougars during the past few years. Today, however, the cougar's primary predator is man. Starvation may also impact cougars when young cats are trying to make it on their own and when big game migrate out of an individual cougar's territory. A biologist in Arizona found cougars that starved to death rather than follow normally dependable deer herds out on to the open lowlands during an extreme winter. Disease has seldom played a decimating role in cougar populations. Despite popular belief, rabies is extremely rare. However, nearly 60% of Montana's cougars carry *Trichinella* larvae, the corkscrew-shaped worm once common in pork. This doesn't seem to harm the cougar, but if you ever have the chance to try cougar meat, make sure the meat is thoroughly cooked. In addition, dispose of cougar remains so this parasite doesn't spread to domestic pets or livestock.



BILL SWANSON

Deer and elk are the mainstays of the cougar's diet in Montana.

COUGAR MANAGEMENT IN MONTANA during the first 80 years of statehood was simple—kill them to benefit other species. Bounties were initiated in 1887 and continued until 1962, with an average kill of about 45 cougars a year. Over the years, indiscriminate poison sets intended for wolves and coyotes probably took their toll on a significant number of non-targeted cougars. By the 1920s, the cougar's distribution, and hence the taking of cougars for bounties, was restricted primarily to west of the Continental Divide. Deer were still abundant there, there were fewer conflicts with livestock, and the prohibitive terrain denied access for bounty hunters to many places.

The 1971 Montana Legislature joined with most other western states and gave the cougar status as a game animal. By 1972, the status of the cougar had been changed to game animal in all western states. In Montana, a five-month kill season was initiated in the winter of 1971-72, with a legal take of 51. The initial legal harvest primarily occurred west of the Continental Divide. As cougar hunting became more popular and access to the western mountains increased, the kill season was reduced in 1976 to two and one-half months. Demand continued to increase at about 15% a year, and kill quotas were implemented during 1986 in Fish, Wildlife & Parks regions One (Kalispell) and Three (Bozeman) and statewide in 1988. The quotas have been designed to protect the female portion of the population, while

BARBARA THOMAS

After years of persecution, the cougar was given status as a game animal in Montana in 1971. With progressive management, cougar populations have fluorished—Montana probably has more cougars in more places today than at any time this century.

providing a cap on the total kill. Last year 228 cougars were legally taken in the state—more than twice as many as in any one year under the bounty system. Cougar numbers have flourished under more progressive deer and elk management along with management of cougar mortality at the hunting unit level. With the distribution of cougars restored to nearly historical levels, the take once again has ranged from the Yaak Valley to the Powder River Basin, and from the Missouri River Breaks to the Tendoy Mountains.

Cougars can be hunted in a number of ways, but the only effective way is with trailing hounds. In his book, "Soul Among Lions: The Cougar As Peaceful Adversary," Harley Shaw said that after 20 years of researching cougars in Arizona, hounds and cougars were inseparable to him. Developing a pack of hounds capable of effectively hunting cougars may be one of the greatest experiences available to the Montana sportsperson (see sidebar on hounds).

As a valued game animal, most things have been going the cougar's way the past 20 years. Every indication suggests that in Montana we have more cougars, in more places, today than at any time this century. It ranks as one of the great wildlife management successes, not only in Montana but across the western United States. But as with any successful investment, we must be careful now that we do not squander our success.

The primary threat to the cougar's future is not from the hunter's gun, but from human encroachment and deterioration of the habitats of deer, elk, and other prey species, and consequently the cougar's habitat. Cougar-human interactions will also play a role in society's view of the cougar. We will have to tolerate aggressive management action, including the destruction of habituated cougars, to protect human life. As stewards, we must remain focused on maintaining healthy populations through conservation of large mammals and their habitats.

While wilderness offers perhaps the best habitats for this creature, it will ultimately be human tolerance of the large carnivores in this increasingly human-centered world that will dictate the cougar's distribution and abundance. Jim Peek, professor at the University of Idaho, said in his book on wildlife management, "...one might conclude that a good measure of our ethical and moral growth would be how we learn to treat those creatures that might beat us to other creatures we wanted for ourselves."

The cougar's future looks bright. Society's perception is changing—from viewing the cougar in the same light as outlaw killers such as Jesse James and Billy the Kid, to one of an integral player in the complex equation of life. ■

HARRY WHITNEY

DAN R. HELTERLINE

Working with their dogs is a year-round occupation for Montana's houndsmen. During spring and summer, many people enjoy the social events of hound field trials (above). Most actual cougar hunting takes place during the good tracking snows of winter.

A Chorus of Hounds

Following the trail hounds as they work an old track and suddenly burst into full chorus is a sportsman's delight. This is the culmination of years spent raising and training long-eared hound pups to trail the lingering scent of their quarry.

The houndsmen and houndswomen of Montana share an abiding love for their dogs and for the outdoors. Some of them also donate time and energy to assist in mountain lion projects conducted by the Montana Department of Fish, Wildlife & Parks. The Montana State Houndsmen Association recently donated $500 to the department for a radio receiver to be used in the East Slope mountain lion study.

The status of the mountain lion (also known as a cougar in this part of North America) has progressed from bountied predator, to unlimited harvest, to our current quota system, which protects females, kittens, and the overall cougar population. Montana now has a strict quota-controlled mountain lion season during the good tracking snows of winter, when most actual cougar hunting takes place.

The use of dogs is essential in treeing mountain lions to differentiate size and condition of adults, sub-adults, and lactating females with kittens. This allows sportsmen the luxury of selective harvest, or the unforgettable experience of photographing the elusive cougar in its natural habitat.

Working with their dogs is a year-round occupation for houndsmen. During spring and summer, many houndspeople continue to enjoy the social events of hound field trials. These gatherings include scent races, treeing contests that count barks per minute, swim races, and bench shows. A favorite contest is the children's bench show, where youngsters have a chance to pose their favorite dog and win a ribbon or trophy. Old friends and new admire each others' treasured old hound or promising pup, and the kids rediscover the joys of camping under the northern stars. Many events are sanctioned by the United Kennel Club, and Montana boasts several champion and grand champion canines. The Montana State Houndsmen Association, Montana Federation of Houndsmen, Big Sky Houndsmen, and Northwest Houndsmen regularly sponsor such events. Field trials are recreation and fun for the whole family.

In summer and fall, houndsmen often receive complaints from farmers, fish hatcheries, or even neighbors with chicken houses—raccoons are causing damage! Coon hunting is a time-honored sport, far less strenuous than the long days spent trailing the circular tracks of a mountain lion. Older and younger sportsmen alike can share the thrill of a coon chase on a warm summer's evening.

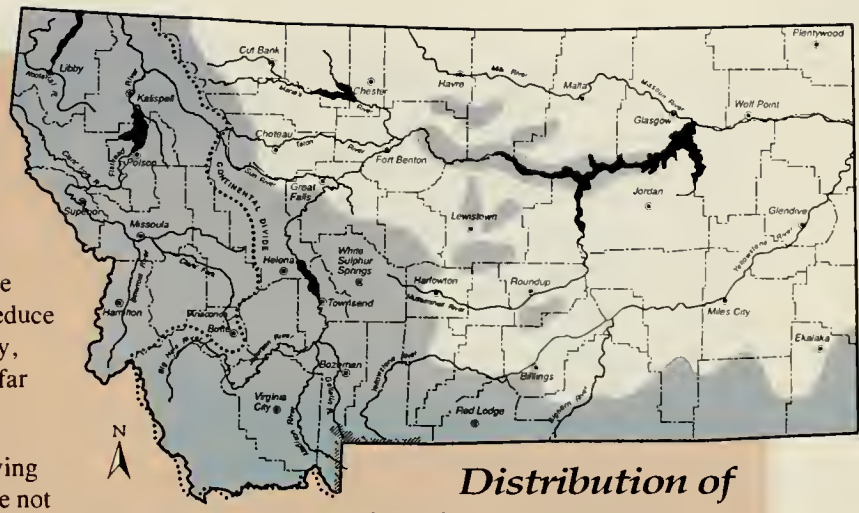
Houndspeople play an important role in local economies. Their avocation demands a large investment in dogs, dog food and veterinary supplies, sporting clothing and boots, dog houses and vehicle dog boxes, gasoline, snowmobiles and snowshoes, and even tents and trailers for field trials. Owning trailing dogs is a consuming interest!

So when you next see that long-eared, cold-nosed, loose-lipped, deep-throated hound, you'll know the time, training, and affection that has contributed to his education. Perhaps you'll also understand a little more about the heritage of today's houndspeople and the love they hold for their sport.—*Sandy Seaton, past president, Montana State Houndsmen Association*

If You Live In Mountain Lion Country...

We can live with these magnificent predators if we respect both mountain lions and their habitats. To reduce the risk of problems with lions on or near your property, follow this list of simple precautions. Prevention is far better than confrontation.

- Closely supervise your children when they are playing outdoors. Make sure they are home before dusk and are not outside before dawn. Talk with your children about lions and teach them what to do if they encounter one.
- Eliminate hiding cover for lions. You don't have to remove all vegetation, but remove enough so a lion cannot come into your yard undetected.
- Don't attract wildlife, especially deer, into your yard by feeding them or providing them with salt. Use native plants in landscaping projects, because non-native plants attract deer and lions will, in turn, be attracted.



Distribution of Mountain Lions in Montana

- Roaming pets are easy prey. Bring pets in at night. If they are left out, confine them in a kennel with a secured top. Don't feed pets outside because this attracts not only young lions but other small animals that lions prey upon. Place domestic livestock in an enclosed shed or barn at night.
- Encourage your neighbors to follow these precautions as well.

If You Meet a Mountain Lion...

Most Montanans live all their lives without a glimpse of a mountain lion, much less a confrontation with one. No research has been conducted to determine the best course of action if you confront a lion. But based upon observations of those who have met up with lions, some patterns of lion behavior and appropriate human response are emerging.

Mountain lions are carnivores at the top of the food chain and their actions are often unpredictable. With this is mind, here is a list of recommended responses to minimize the likelihood of attack or chance of human injury.

- When you walk or hike in lion habitats, go in groups and make enough noise so you don't surprise a lion. A sturdy walking stick is a good idea—it can be used to ward off an offending lion. Make sure all children are close to you and within your sight and control at all times.
- Never approach a mountain lion. All lions are unpredictable. However they will normally avoid a confrontation—give them a way out.

If you encounter a mountain lion:

- **STAY CALM.** Talk to the lion in a confident yet calm voice.
- **PICK ALL CHILDREN UP OFF THE GROUND IMMEDIATELY.** Children tend to frighten easily and their rapid movements may provoke an attack.
- **DO NOT RUN.** Move slowly. Try to back away from the lion slowly. Sudden movement or fleeing behavior often triggers instinctive predatory attacks by lions.
- **DO NOT TURN YOUR BACK ON THE LION.** Face the lion and remain in an upright position.
- **DO ALL YOU CAN TO ENLARGE YOUR IMAGE.** Do not crouch down or try to hide.

If a mountain lion behaves aggressively:

- **ARM YOURSELF.** Grab a large stick, throw rocks, speak louder and more firmly. Do not turn your back or stay crouched down. The object is to convince the lion that you are not prey, but in fact are a danger to it.
- **FIGHT BACK, BUT REMAIN STANDING UP.** Many people have survived lion attacks by fighting back with everything from rocks, sticks, and bare fists, to fishing poles.
- If you have an encounter with a mountain lion, please report it immediately to the nearest office of the Montana Department of Fish, Wildlife & Parks.

PERSPECTIVES

An Endangered Species

story and photo by MIKE LOGAN

I AM AN ENDANGERED SPECIES and pity the world if I am allowed to become extinct.

Unlike other endangered species, almost no one enters the fight on my behalf. I wage my battle, deserted and friendless, against steadily mounting odds.

What have I done to deserve such a desolate end?

I have loved beauty. I have admired grace. I have wondered at courage. I have applauded agility and cunning.

I have walked in awe of nature's majesty.

I have felt the two-edged, frost-sparkled sword of northern winter.

I have thrilled at the bull elk's bugle in the autumn's shimmering gold.

I have startled at the wing-tearing roar of mallards cupped and swarming in before the blizzard's lash.

WHO AM I?

I am the sport hunter.

I have saved countless species from the extinction I now face daily. Not one has disappeared forever by my hand.

I am the predator who thins the swollen, self-starving herds nature can no longer regulate. I go my way, misunderstood, maligned, and alone.

I kill, but with a respect and admiration impossible to communicate. My critic sees only the kill. He cannot know the love of the hunt in which the kill is only sometimes the final act.

In my prey, I witness a tenacity, heart, and wile unsuspected by those who go only to observe.

I practiced conservation before the word was coined. I killed where there was surplus and refrained where there was none.

When dwindling herds nearly vanished forever, I demanded a halt. When knowledge was necessary to bring them back from the brink, I funded the research.

When no one else cared, I bore the burden.

Now, when it is popular to care and conservation is a catchword, I receive no praise for my long and lonely vigil.

The opposite is true.

I AM BATTERED AND BESIEGED from all sides.

When the assassin's bullet finds its mark, my way of life is suspect.

When hoodlums and thieves kill and maim, I am threatened.

When poachers decimate Africa's game, and man's growing hordes carve up the precious veldt, I am reviled.

When herds starve while developers fatten on the wintering grounds, I am vilified.

Be my friend, for if I disappear, these things which I have prized so highly and fought for so long, could vanish with me.

I am an endangered species and pity the world if I am allowed to become extinct. ■

NEXT TIME, SEND A BIGHORN!

I read with great interest the article in your May/June issue regarding the elk that wandered to Independence, Missouri. As an avid (albeit unsuccessful) non-resident hunter, I just wanted to let you know how much I appreciate you sending an elk home for me to hunt daily on my way to work.

Unfortunately, the Missouri Department of Conservation, evidently ruling that my Toyota is not an adequate elk weapon, captured the beast before I could score. (Perhaps this is for the best; from the pictures in the Independence Examiner of the cars that did hit the elk, a larger caliber such as a Kenworth may be in order.)

In any case, I was hoping you could send another of your trophy animals in this direction. I'm not picky—perhaps a full curl bighorn or a Shiras moose. As there are several annoying dogs and cats in my neighborhood, a grizzly or cougar would be okay, too!

All kidding aside, I enjoy your magazine a lot. I just hope the citizens of Montana realize how lucky they are to have such a variety of wildlife to view and enjoy.—*Bill McCully; Independence, Missouri*

FISHING: NO HIGH-SPEED CONTEST

Fishing is a treasured outdoor activity. Relaxing, refreshing, it scrubs away the acid fallout of tension, debt, and doubt.

When fishing tournaments enter the picture, fishing becomes something else. The name of the game is to hook 'em fast, yank 'em out, throw 'em in the live (?) tank, and head for the weigh-in. I have never caught a walleye or pike or bass, so I can't say much about whether this is the way it is usually done or not.

I guess I'll continue to fish for little fish in waters too small for a speedboat and too shallow for a chunk of plastic and metal fit for snagging a paddlefish.

I'm not a purist. I use flies, lures, worms, whatever, but fishing isn't a high-speed contest. It's a search for solitude, beauty, the calm liquid chuckle of snow meltwater flowing around my feet.

The small challenge of doing it well enough to occasionally feel the adrenalin surge ignited by a fish flying, prism colors flashing out of the water, with or without what I'm using in its mouth, makes my day.

Thank God for Montana's great spaces, small streams, and little fishes, suitable for those who avoid the many-times hooked, stupid giants and the guided arrogance of the Bighorn. I would eat worms, dirt and all, rather than fish in a foaming fleet or a lodgepole forest of rubber-clad legs, devoted to measuring the joy of fishing by choice of lure or quantity.

Keep the Bighorn full of tourist purists, keep the big lakes full of fast-boat fishers. Thank the outdoor magazines for advertising "high tech" and "keeping up with the Joneses." My little waters are more mine because of them.—*Joe Walters, Billings*

FANTASTIC PHOTOS, WONDERFUL WORDS

We received your Jan./Feb. 1991 Special Photo Issue. It is terrific. We have also been long-time Charlie Russell fans.

The photography is fantastic, and I'd like another copy to send to my cousin who is a photographer in Boulder, Colorado.—*Laura E. Riensche; San Leandro, California*

PRAISE FOR PALMER'S PROSE

Just a word to let you know how much I enjoyed Tom Palmer's story, "Madison Midsummer" in your May/June 1991 issue. A *great* article—very informative, well written, humorous, it kept me wanting to read on. He should do more.

I've been a subscriber for nearly a year and enjoy your magazine very much. It's a class act.—*Bill Barnett; Wenatchee, Washington*

MONTANA OUTDOORS INDEX

The major items published in *Montana Outdoors* in 1991 are indexed below. Extra copies of all '91 issues are available at $2 each (includes postage). The following back issues are available at the same price:

1971—July/August, Sept./Oct.

1972—July/August, Sept./Oct., Nov./Dec.

1973—all issues, except March/April and May/June

1974—all issues

1975—all issues, except Sept./Oct.

1976—all issues, except Jan./Feb.

1977—all issues, including Yellowstone Special Issue

1978—all issues, including Special Parks Issue, except May/June

1979—all issues

1980—all issues, including Special Hunting Issue, except Jan./Feb. and July/August

1981—all issues

1982—all issues, except May/June and Nov./Dec.

1983—all issues

1984—all issues, except Nov./Dec.

1985—all issues, except March/April

1986, 1987, 1988, and 1989—all issues

1990—all issues except July/August and Sept./Oct.

To inquire about or order a back issue, write: Back Issues, *Montana Outdoors*, Department of Fish, Wildlife & Parks, 930 Custer Avenue West; Helena, MT 59620.

BOOKS REVIEWED

Prey for Survival—by S. Bradley Stoner (March/April).

The Hiker's Guide to Montana's Continental Divide—by Tad Brooks and Sherry Jones (March/April).

Laugh Kills Lonesome & Other Poems—by Mike Logan, illustrations by Mike Korn (March/April).

The Dry Fly: New Angles—by Gary LaFontaine (May/June).

Mule Deer Country—by Valerius Geist, photography by Michael H. Francis (Nov./Dec.).

FISH/FISHING/WATER

Sampling Bugs Speedily—A new technique—rapid bioassessment—enables biologists to measure stream health by sampling "bugs" (story and photos by Bernie Kuntz, March/April).

Dinosaurs of the Deep—Over 200 million years ago, pallid sturgeon evolved in large, turbid prairie rivers. They still swim in Montana's Missouri and Yellowstone rivers (Pat Clancy, March/April).

Doorways to Adventure—Montana's 300 fishing access sites open the door to outdoor adventure (Bruce Rehwinkel, March/April).

Our Point of View—The department's fisheries management plans signal a successful partnership in resource management (Al Elser, May/June).

Madison Midsummer—The river is a sacred place; it draws us away so we can dream the songs and imagine the winds of an earlier time (Tom Palmer, May/June).

Planning for the Future—When it came time to write fisheries management plans for the state's most important waters, Rock Creek was at the top of the list (Dennis Workman, May/June).

The Year of the Chinook—Montana's record-setting fish for 1990 (Kay Morton Ellerhoff, May/June).

On the Smith: New Rules—The Fish, Wildlife & Parks Commission approved a fee structure for both recreational and commercial floaters on the Smith River. The Catchall (Doug Habermann and Jeffrey Tiberi, May/June).

Scenes from a Hatchery Year—Fish from the department's hatcheries find new homes in many Montana lakes and reservoirs (Jose R. Serrano-Piche and Thurston Dotson, July/August).

ACCESS-ible Trout—Public fishing access sites offer some outstanding fishing which is often overlooked and underrated (Stan Dietz, July/August).

The New Missouri—Over the last two decades, the stretch of the Missouri from Holter Dam to Cascade has changed—there are signs of trouble in paradise (Steve Leathe, July/August).

The Ten Commandments of River Etiquette—It's only natural to expect that a substantial portion of people using the rivers are going to be green and unaware of some of the basic rules of the game. The Catchall (Mike Lightle, July/August).

Watchable Wildlife—"A Sucker Called Blue"—Some might call the blue sucker the ultimate fishery oxymoron: a BEAUTIFUL sucker (Chris Hunter, illustration by Gretchen Grayum, Sept./Oct.).

The Blackfoot Challenge—The trout that endure in the Big Blackfoot owe their grit to the harshness of that water (Don Peters, Sept./Oct.).

GAME/HUNTING

Our Point of View—Montana now offers some of the finest turkey hunting in all of the western states (K.L. Cool, March/April).

Merriam's on the Move—New and expanded turkey populations in many parts of Montana have attracted both spring and fall turkey hunters (Brian Giddings, March/April).

Our Point of View—Montana is the first state to proclaim a full week to officially pay tribute to the sport of hunting as an expression of our cultural traditions (K.L. Cool, Sept./Oct.).

Ekalaka Relativity—Sport is a relative thing...it grows, changes, and develops, even as a person himself matures (Alan Charles, illustrations by Takehiro Taira, Diane Nugent, and Dan Coughlin, Sept./Oct.).

The Great Montana Chicken Ranch—As a "windshield survey" showed, some pretty big areas of Montana have practically no grouse, pheasants, or partridge remaining (Tom Hinz, Sept./Oct.).

Perspectives—"My Horns, My Heads, Her House"—It could be argued that a four-foot-high crawl space that doubles as a root cellar might not be an appropriate trophy room (Wade Fredenberg, illustrations by Dave McGee, Sept./Oct.).

Decoy Program: Up and Running—The new decoy program provides wardens with an important new way to prevent poachers from stealing wildlife from the public. The Catchall (William Phippen, Sept./Oct.).

Cooperation Spells Success—The department, landowners, sportsmen, and Broadwater County outfitters and guides joined in a cooperative effort to solve a problem, provide public hunting, and offer donated services. The Catchall (Broadwater County outfitters

and guides, Sept./Oct.).

Our Point of View—Call them wildlife decoys, wildlife simulations, or what you will, their primary intent is to provide our wardens with a means to curtail the activities of those who set out to deliberately break the law (K.L. Cool, Nov./Dec.).

Perspectives—"An Endangered Species"—Pity the world if the sport hunter is allowed to become extinct (story and photos by Mike Logan, Nov./Dec.).

Safety Education Programs Need Your Help—Get rid of unwanted, damaged, or non-functional firearms and archery equipment and help the Hunter Education and Bowhunter Education programs at the same time. The Catchall (Nov./Dec.).

GENERAL

Special Photo Issue—(Jan./Feb.).

Thornbrugh "Three-Peats" as Waterfowl Stamp Winner—In the six years that Montana's waterfowl stamp competition has been conducted, Victor artist Joe Thornbrugh has painted the prize three times (William Phippen, March/April).

Perspectives—"Montana Mardi Gras"—An Ash Wednesday morning float along the mid-Yellowstone yields a parade of birds and sounds of geese (Channing W. Welin, March/April).

Restoring Wetlands on Private Lands—Landowners, recreationists, taxpayers, and wildlife all benefit from the U.S. Fish and Wildlife Service's Private Lands Program (Jim Stutzman, March/April).

Governor Stephens Names Two New Commissioners—Governor Stan Stephens appointed Glasgow attorney Jim Rector and Sweetgrass County Commissioner Elaine Allestad to the Montana Fish and Game Commission. The Catchall (March/April).

Stermitz Receives Citation for Heroic Service—The Governor's Citation for Heroic Service, presented by Governor Stan Stephens, recognized Game Warden Mike Stermitz of Missoula for his bravery and quick actions. The Catchall (Liz Lodman, March/April).

Game Wardens Produce Magazine—*The Montana Game Warden* is a magazine by the game wardens of Montana, and it tells the story of wildlife law enforcement in the state. The Catchall (May/June).

"**The Full Circle**"—"The Full Circle," a department film that chronicles the profession of wildlife management in Montana, received the New York Film Festival's bronze medal. The Catchall (May/June).

Biologists Receive Awards—Scott Denson and Ray Mule, department biologists in Glasgow, were recognized for their outstanding accomplishments by the Montana Chapter of The Wildlife Society. The Catchall (Jim Liebelt, July/August).

Wentland Receives DU Award—Glasgow Wildlife Manager Harold Wentland was named Montana Ducks Unlimited Wetland Professional of the Year. The Catchall (July/August).

Beyond Textbooks and Classrooms—Project WILD gears its activities toward instilling a strong environmental ethic in participants (story and photos by Jim Keener, Sept./Oct.).

Under the Same Sky—The grasslands of Inner Mongolia look a lot like Montana east of the Continental Divide—before fences (story and photos by Michael R. Frisina, Nov./Dec.).

This Is Not Just Another Fish Story—Dating to 1889, more than 70 sightings have described a "serpent-like" or "superfish" monster in Flathead Lake (story and photos by John Fraley, Nov./Dec.).

PARKS/DEPARTMENT LANDS

Rosebud Revisited—Rosebud Battlefield State Park has a long and rich history, replete with buffalo, a battle, and what might have been the Montana Territory's first rodeo (Doug Monger, May/June).

Our Point of View—Our state parks represent the unparalleled richness of Montana's natural and cultural resources (K.L. Cool, July/August).

Lands Legacy—"Duck Condos on the Lake"—When it comes to waterfowl habitat, Lake Helena Wildlife Management Area is full of promise (Tom Palmer, July/August).

Perspectives—"Companion in the Adventure"—The journal and drawings of a summer parks intern (story and illustrations by Sis Ketcher, July/August).

Treasures for Tomorrow—Whether you come for relaxation or recreation, Montana state parks have something for every visitor (Debbie Cheek, July/August).

Lands Legacy—"Shelter from the Storm"—Dome Mountain—and its vast sweep of high grasslands so crucial to wintering elk—has become one of the state's most important wildlife management areas (Bernie Kuntz, Sept./Oct.).

Lands Legacy—"Still A Good Idea"—The Blackfoot-Clearwater Wildlife Management area exemplifies the public's enduring commitment to wildlife restoration and conservation (Mike Thompson, Nov./Dec.).

WILDLIFE

Nongame Sampler—"Bluebirds in the Big Sky"—With restoration efforts, Montana's bluebird population is sailing strong in the Big Sky (Bridget E. Moylan, March/April).

Eagles and Viewers at Canyon Ferry—As the eagles paid tribute to the kokanee, flocks of viewers sporting binoculars and high-powered zoom lenses paid tribute to the eagle. The Catchall (Bridget E. Moylan, March/April).

Call of the Trumpeter—The two-note call of the trumpeter came close to vanishing from the lower 48 states (Deborah Richie, May/June).

Kansas City, Here I Come!—From Montana to Missouri—the travels of Earl the elk may be the longest on record (Gary Olson, May/June).

Watchable Wildlife—"Banking on Swallows"—At one-half ounce, bank swallows are the smallest swallows in North America (Janet Ellis, May/June).

Perspectives—"Spring Mountain"—Everyday concerns made it difficult to fully acknowledge what a spring on the side of a mountain had to offer (Craig Jourdonnais, May/June).

Watchable Wildlife—"Warbling Voyagers of the West"—Bird migration is one of the marvels of nature, and Montana warblers are masters at long-distance journeys (David N.B. Lee, July/August).

Mockingbirds in Montana?—The fourth edition of "Montana Bird Distribution" is scheduled for publication at the end of the year. The Catchall (Deborah Richie, Sept./Oct.).

The Cat With Many Names—Whether you call it cougar, puma, mountain lion, catamount, painter, or panther, this big cat is one of the most adaptable and effective predators on the planet (Shawn J. Riley, Nov./Dec.).

Big Sky UFOs—Myth, mystery, and superstition have led to many misconceptions about bats (Tom Lemke, photos by Merlin D. Tuttle, Bat Conservation International, Nov./Dec.).■

BLACKFOOT-CLEARWATER WILDLIFE MANAGEMENT AREA

STILL A GOOD IDEA

BILL THOMAS

by MIKE THOMPSON

A LOT OF WATER has passed under the bridge since 1937. Ten U.S. presidents, a host of representatives, and plenty of their popular policies have come and gone. A lot of ideas that seem bad today seemed like good ideas just a few short years ago.

BILL THOMAS

Today's Blackfoot-Clearwater Wildlife Management Area is the product of 37 land transactions since purchase of the Boyd Ranch (above) in 1948.

In the face of ever-changing public attitudes at state and national levels, Montana's Blackfoot-Clearwater Wildlife Management Area (WMA) exemplifies the public's enduring commitment to wildlife restoration and conservation. It's a commitment tested and reinforced by three generations of Americans. And it's *still* a good idea!

The Blackfoot-Clearwater WMA, named for the rivers that approximate the southern and western boundaries of the property, provides critical winter range for herds of about 1,000 elk and 1,500 deer (both whitetails and muleys). Confined by snow and human settlement to a primary winter range area of about 30,000 acres, these elk and deer scatter across more than 1 million acres during spring, summer, and fall, including the Danaher and Youngs Creek drainages of the Bob Marshall Wilderness Area.

In stark contrast, the seeds of this success were sown during a time of depleted elk populations. From November 1942 through April 1943, Montana Department of Fish, Wildlife & Parks (FW&P) personnel drove their trucks over 6,800 miles, rode "motor toboggans" 438 miles, and hiked 685 miles to count as many elk as possible. They found a grand total of 214 elk along the entire 80-mile length of the Blackfoot Valley, and only 70 elk within today's boundaries of the Blackfoot-Clearwater WMA.

Recognizing that exploited wildlife populations of the early 1900s could not recover without adequate habitat, hunting advocates spearheaded passage of the federal Pittman-Robertson Act in 1937. This established a federal excise tax of 11% on firearms, ammunition, and archery equipment, and a 10% tax on handguns (current tax formula). Some money from this fund was provided to states for purchase of wildlife habitat.

The Boyd Ranch, 45 miles east-northeast of Missoula, was offered for sale in 1948. FW&P provided 25% of the purchase price using revenue from Montana hunting license sales, and the federal government provided the remaining 75% through Pittman-Robertson dollars. The department assumed ownership and management control of the property, and the Blackfoot-Clearwater WMA was born.

AS IN THE PAST, the exceptional winter range potential of the Blackfoot-Clearwater WMA comes from its unique combination of winter forage types preferred by elk and deer and its fortuitous location at a crossroads of natural big game migration routes. At the center of this crossroads is Boyd Mountain, the hub of the WMA and a prolific producer of shrubs under a forested canopy. The broad, nonforested grasslands of Blanchard Flats lie at the mountain's base.

From a newly developed elk viewing

area and display kiosk on State Highway 83 at Clearwater Junction, you might see a group of 100 or more elk feeding on Blanchard Flats during a winter dawn or dusk. The object of the elks' attention is rough fescue, a bunchgrass that grows in clumps measuring four to eight inches in diameter and about six inches tall when weighed down by snow.

On their winter ranges, elk select rough fescue as forage over other plants—as long as it is not buried under prohibitively deep or crusted snow. Rough fescue dominates a 1,300-acre basin on Blanchard Flats (largely hidden from roadside view), forming one of the most valuable, nearly pristine native grasslands in Montana. Once part of the range that supported the Boyd Ranch's 1,200 cattle and 6,000 sheep, this grassland basin alone contributed an estimated 500 tons of rough fescue to the diet of the Blackfoot-Clearwater elk herd during the winter of 1990-91.

In contrast to winter ranges along the eastern slope of the Montana Rockies that are periodically blown free of snow by warm chinook winds, snow accumulates at Blanchard Flats throughout winter. When a crust forms on the snow, often in mid-January or February, elk turn their attention to an alternative food source—the shrubs under the timber canopy on the slopes of Boyd Mountain.

White-tailed and mule deer on Boyd Mountain also depend on the buds and twig tips of shrubs such as serviceberry, chokecherry, mountain maple, upland willow, and shiny ceanothus for food. Ross Baty, a graduate student at the University of Montana, Missoula (working under the direction of Dr. Les Marcum, in cooperation with FW&P and the Lolo National Forest), is studying how deer handle the stress of competing with elk during the most severe period of winter.

To increase the information provided by his winter observations, Baty and assistant Mike Barton captured 66 mule deer, 37 white-tailed deer, and six elk on the Blackfoot-Clearwater WMA from January through March, 1991. They marked all captured animals with colored, individually recognizable ear tags or neck bands and equipped some with radio collars.

The information they collect between now and the end of the study in 1993 will shed light on the complex interactions of elk, deer, shrubs, trees, and weather on the Blackfoot-Clearwater WMA. This information is one piece of the puzzle that department managers are working with in their 43-year-old quest to achieve the full potential of the public's investment in this WMA.

ANOTHER COMPLEX PIECE of the management puzzle is the unique combination of land ownership and land uses within the winter range of the Blackfoot-Clearwater elk herd—both on and off the WMA. With over 65,000 acres, the Blackfoot-Clearwater is the largest of Montana's WMAs. However, only 22% of the WMA is deeded to FW&P, mostly on Blanchard Flats and along Cottonwood Creek. The department leases the Boyd Mountain portion of the WMA from Champion International Corporation and the Montana Department of State Lands.

Both Boyd Mountain leases convey livestock grazing rights to FW&P. The department chooses not to graze livestock on these leased parcels, reserving the shrub and grass forage for elk and deer. These leases convey no other rights. Timber management on Boyd Mountain remains at the discretion of the landowners.

MIKE THOMPSON

On their winter ranges, elk select rough fescue as forage over other plants—provided it is not buried under deep or crusted snow.

While FW&P, Champion, and State Lands personnel work together on public access management and search for common ground on other management issues, the Boyd Mountain portion of the WMA remains vulnerable to changes in land ownership or management policies. In fact, the grazing lease with Champion is subject to annual renewal.

Today's Blackfoot-Clearwater WMA is the product of 37 land transactions since 1948. Negotiations on land exchanges, easements, and other solutions to the land ownership dilemma continue.

WITHOUT COOPERATION, THE SUCCESS STORY of the elk population on the Blackfoot Clearwater WMA would be at odds with adjacent ranching operations. At no time during the winter does the number of WMA elk on private ranches exceed the number within the WMA boundaries. For example, when people see 200 elk off the WMA on private land, they often conclude that *all* the elk are off the WMA, and the elk prefer the rancher's grazed pastures, when in fact 800 to 1,000 elk remain on the WMA. Nevertheless, sizable numbers frequently drift off the WMA, sometimes for extended periods of time, to utilize favorable, privately owned habitats. Groups of 100 or more can cause serious damage to ranchers' fences and eat forage intended for livestock.

FW&P and four neighboring ranches are making the best of this situation through a leasing program initiated in 1990 and made possible by purchase of the Dreyer Ranch and its addition to the Blackfoot-Clearwater WMA in 1989. These habitat management leases between the department and private landowners strive to expand the boundaries of the WMA by improving habitat on private ranches (as well as the WMA) and increasing ranchers' tolerance for WMA elk. In return, the ranchers expand their agricultural potential to

include specific WMA parcels.

The Dreyer Ranch, along Cottonwood Creek just north of the old Boyd Ranch, lies within the primary migration corridor for the Blackfoot-Clearwater elk herd. Lush, irrigated hay meadows provide nutritious green grass for migrating elk and deer in spring and again in the fall.

The Dreyer family offered the ranch to FW&P in 1987. The department feared that valuable habitat could be destroyed and public investments in the Blackfoot-Clearwater winter range could be lost if new owners subdivided, fenced, or otherwise managed the land in a way that disrupted elk migration or would not tolerate the number of elk the Dreyers did. Thanks to a product of the 1987 Montana Legislature—House Bill 526—FW&P was able to use funds generated by sale of non-resident combination licenses and resident sportsman's licenses to purchase the property.

FW&P agreed with public comments on the proposed Dreyer Ranch acquisition that maintenance of the "working ranch" character was compatible with spring and fall elk habitat needs and would result in continued, proper land stewardship. However, Montana's wildlife management agency is not equipped with the work force or equipment to run a ranch. The natural solution was to use professional ranchers—the neighbors who provide elk habitat for Blackfoot-Clearwater elk on their private lands.

The current lease came about after considerable FW&P inventory work and public input. Under individual leases, four landowners receive hay as well as native rangeland and hay meadow pasture for cows and calves. The hay and pasture come from the Dreyer Ranch addition and from carefully selected portions of the old Boyd Ranch that should benefit from agricultural treatments. In addition, one rancher is granted use of WMA buildings and corrals.

"...Montana's Blackfoot-Clearwater Wildlife Management Area exemplifies the public's enduring commitment to wildlife restoration and conservation."

In return, the four cooperating ranchers annually:

- manage grassland using rest-rotation cattle grazing prescribed by FW&P to improve about 940 acres of privately owned habitat for WMA elk;
- reserve another 480 acres of their private grassland for elk winter forage;
- participate with FW&P in developing a plan to coordinate elk and cattle management on a 3,400-acre ranch adjacent to the WMA;
- maintain or improve vegetation for elk on about 1,000 acres of WMA hay meadows and 900 acres of WMA native grassland;
- produce 40 tons of hay for FW&P to sell, the proceeds from which are applied to a FW&P trust fund for property maintenance along with a $2,100 building rental fee;
- maintain and repair a sprinkler irrigation system on the Dreyer property and a flood-irrigation system on the Boyd property;
- maintain up to 40 miles of fences;
- spray weeds for up to 40 hours under FW&P supervision;
- do 80 hours of general maintenance work on the WMA;
- maintain water levels in an irrigation-fed waterfowl production pond; and
- maintain buildings on the Dreyer Ranch.

Possibly most important for the future of the Blackfoot-Clearwater WMA and its elk and deer herds, an improved working relationship is developing between the department and its neighbors, and the cooperating ranchers are tolerat-

MIKE THOMPSON

Ongoing research projects are designed to shed light on the complex interactions of elk, deer, shrubs, trees, and weather. This spike elk has been fitted with a neck band and radio collar so that its movements can be monitored after release.

ing reasonable numbers of WMA elk on their properties.

The Blackfoot-Clearwater WMA is closed to all public access in winter in order to perform its critical, annual function of providing undisturbed, high-quality winter range for elk and deer. The closure is necessary to minimize winter stress on elk and deer and to encourage animals to remain on the WMA.

However, this WMA is open to regulated public access from May 15 to mid-November (the closing date varies) when most elk are occupying habitats off the WMA. Regulations are posted at access points, and more information is available from the FW&P Region Two headquarters, 3201 Spurgin Road; Missoula, MT 59801, or phone 406/542-5500. ■

The primary goal of the Blackfoot-Clearwater WMA is to provide critical winter range for elk and deer.

TOM WARREN

BLACKFOOT-CLEARWATER WILDLIFE MANAGEMENT AREA

Location: Missoula and Powell counties, about 40 miles east-northeast of Missoula on State Highway 200.
Size: 65,489 acres.
Access: Road access from State highways 83 and 200 from May 15 to mid-November, and developed campgrounds at Clearwater Junction. Wildlife viewing area and information kiosk three-tenths of a mile north of Clearwater Junction.
Management goal: To provide winter range for elk primarily, and for white-tailed and mule deer secondarily.
Hunting opportunities: A-7 licenses and deer B-tags required via the statewide special drawing process to hunt elk and deer during the general hunting season. Archery, upland bird, black bear, and waterfowl hunting open to licensed hunters during open seasons.
Wildlife viewing: Elk viewing from Clearwater Junction at dawn or dusk (with luck) during winter months. Bird-watching from May 15 to mid-November includes the opportunity to see waterfowl, osprey, eagles, shorebirds, owls, cranes, curlews, and woodpeckers. Also, deer, badgers, coyotes, beavers, and occasional black bears.

This Is Not Just Another Fish Story

by JOHN FRALEY

IF YOU BELIEVE GEORGE COTE, THE DEPTHS OF FLATHEAD LAKE harbor a serpentlike creature more than 40 feet long.

Cote, a retired U.S. Army major living in Missoula, and his son, Neal, have seen the creature twice. "The first time we saw it was on May 25, 1985," said Cote. "We were trolling for mackinaw in Yellow Bay when we saw a large object surfacing and diving off the north point of the bay. At first we thought it might be one or more SCUBA divers. We approached the thing slowly, not wanting to scare it. As we got closer, we could see that it was chasing large squawfish in the shallows. At one point it raised its head high out of the water and appeared to be looking at us.

"When we got to within 60 meters of it we realized that it was like nothing we'd ever seen," continued Cote, who in his military life had been trained in observation. "The thing was big: as long as a telephone pole and twice as large in diameter. The skin of the creature was smooth and coal black; it had the perfect head of a serpent. There were from

four to six humps sticking out of the water. It moved away from us slowly, then took off like a streak through the water. It stopped about 400 meters out from the bay, looked back, and dived under the waves. I asked Neal if he believed what we just saw and he said, 'No, and no one else will believe us either.' So we didn't say anything until years later.''

DAVE BOOKS

JOHN FRALEY

During a fishing outing on Flathead Lake in 1985, George Cote (kneeling) and his son Neal saw a serpentlike creature "as long as a telephone pole and twice as large in diameter." They saw it again in 1987. The Cotes aren't the only ones who claim to have seen the Flathead Monster; dozens of apparently valid sightings have been reported over the past 100 years.

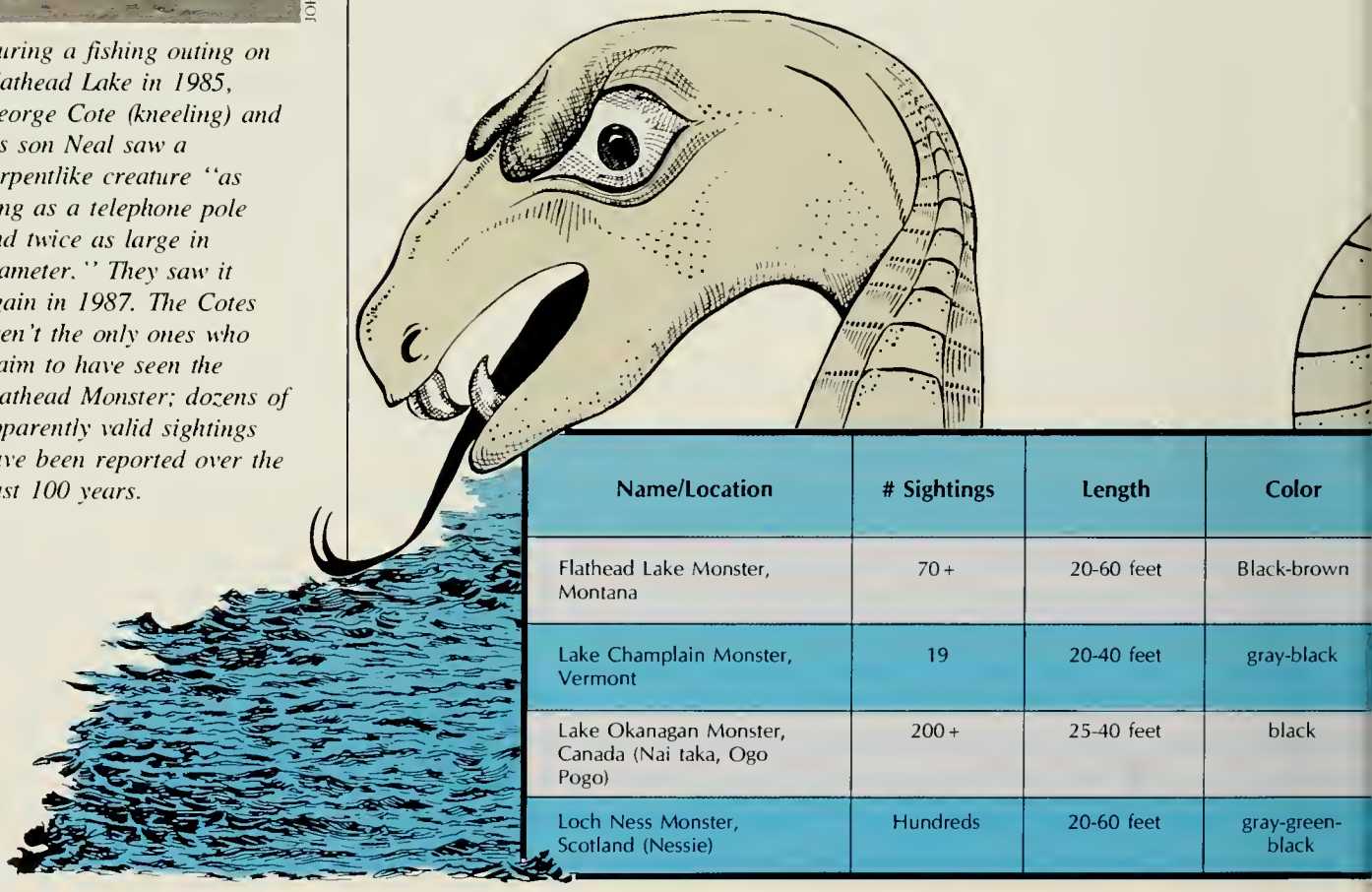
On July 1, 1987, the Cotes saw the creature again, this time near Lakeside. It changed course twice, and they estimated its speed at nearly 10 knots. From 400 meters, they had a perfect view of the creature's head, tail, and body as it swam north toward Caroline Point.

George and Neal Cote aren't the only ones who claim to have seen the Flathead Monster. In fact, more than 70 apparently valid sightings of the phenomenon have been reported, dating to 1889. In that year, passengers and crew of the lake steamer *U. S. Grant* saw what they thought was an approaching boat. As the object came closer, it seemed more like a whale. One of the passengers fired at the object and frightened it away.

LIKE SCOTLAND'S LOCH NESS MONSTER, the Flathead creature or creatures have become a part of local folklore. Whitefish author Dorothy Johnson believed there was something to the legend—she noted that many credible people had seen something strange in Flathead Lake; a local hamburger stand carries a double-decker called the Flathead Monster; a marina rents a Flathead Monster pontoon boat.

Descriptions fall into two major categories: large fish (superfish), and serpentlike creatures. Many of the sightings seem strikingly credible, and they can't be explained away easily.

Sightings in which a serpentlike monster is described bear hair-raising similarities to Cote's report. Consider a letter we received recently about a 1971 sighting by Lori Evelend of Rocker, Montana: "On a late June Sunday in 1971, three friends and I left West Shore State Park in a 14-foot motorboat. We were headed for Yellow Bay to fish. We weren't very far from Yellow Bay, about a half-mile, when on our right about 100 feet away this creature appeared. Jack turned the boat toward it as we all looked at each other with the thought, 'I didn't see that if you didn't see that.' I also thought, 'My God, this is like a dog chasing a car. What is Jack going to do when he catches it?'



Name/Location	# Sightings	Length	Color
Flathead Lake Monster, Montana	70+	20-60 feet	Black-brown
Lake Champlain Monster, Vermont	19	20-40 feet	gray-black
Lake Okanagan Monster, Canada (Nai taka, Ogo Pogo)	200+	25-40 feet	black
Loch Ness Monster, Scotland (Nessie)	Hundreds	20-60 feet	gray-green-black

"The creature showed three humps which stuck up above the water about five feet. I guessed the overall visible length to be about 30 feet.

"At about 75 feet away, it sank out of sight. We continued toward Yellow Bay but within about two minutes it appeared on our left side, roughly the same distance away. Again there were amazed looks, and Jack turned the boat toward it again. It sank out of sight and we didn't see it again."

Bigfork businessman George Darrow recalls seeing a similar object several years ago near Somers Bay: "My wife and I were sitting on the deck of a home on the west shore one evening, watching the sailboats go by, when suddenly I saw two, then three, loops in the water, 100 yards offshore moving parallel to the shoreline. The object was snakelike, serpentlike, and there was about eight to 10 feet between loops.

"We watched it for two minutes or so," continued Darrow. "Then I turned to Elna and said, 'Did you see that?' And we each had. It wasn't a SCUBA diver, it wasn't waves; I don't know what we'd seen. Knowing the ridicule that stories like this are subject to, we kept it to ourselves."

Reports of serpentlike creatures have been common in some other large, deep lakes (see sidebar), probably the most famous being the "Nessie" of Loch Ness, Scotland. Creatures described in these lakes bear an uncanny resemblance to the descriptions of serpentlike denizens of Flathead Lake.

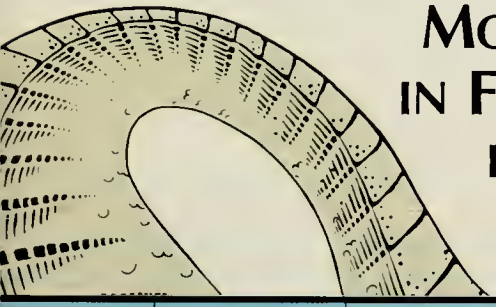
Many people have reported seeing large fish or "superfish" in Flathead Lake. These sightings generally are assumed to be sturgeon from the lower Columbia drainage which entered the lake before dams, or relic sturgeon from glacial Lake Missoula. Leslie Griffith claimed to have caught a sturgeon over seven feet long in Flathead Lake on May 28, 1955, but the validity of the catch is questionable. Many people felt that the sturgeon was transported from the Snake River drainage and that Griffith's claim was nothing more than a publicity stunt.

No one has documented a sturgeon from Flathead Lake. Nevertheless, many of the reported sightings in Flathead Lake describe one or more sturgeonlike fish

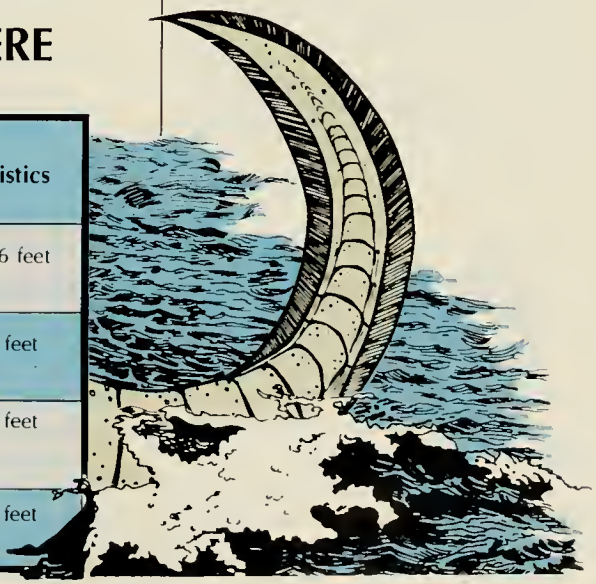
JOHN FRALEY

Paul Fugleberg of Polson, monster expert and former editor of the Flathead Courier, *has catalogued nearly 70 sightings of strange creatures on Flathead Lake dating from 1889.*

Similarities Among Monster Sightings in Four Large Lakes in the Northern Hemisphere



Head	Body	Tail	Skin	Lake Characteristics
snakelike	snakelike, vertical humps	eel-like	smooth	28 miles 386 feet
snakelike	snakelike, vertical humps	pointed and flattened	smooth	100 miles 400 feet
	vertical humps	forked/flattened	smooth	79 miles 700 feet
varies, usually small	vertical hump	varies	smooth	24 miles 700 feet



five to 15 feet long.

Take, for example, an account by Joe Krall of Sunburst who recently decided to discuss a sighting he made more than 40 years ago: "During a summer in the late 1940s while at a camp on Cromwell Island, a friend and I took a sightseeing trip by motorboat around Wild Horse Island. Our boat coasted into a cove which was 40 to 50 feet in diameter while we watched some deer on a slope. In the cove were about one-half dozen large fish that whirled about a few seconds, then swam under our boat and out into deep water. The fish were about five feet long and possibly weighed over 100 pounds each.

"There's something out there," says Paul Fugleberg, "surprising people, frightening them. What it is I don't know. But I don't deny it's there because there have been so many credible witnesses, people whose word you just don't doubt."

"Our eyesight was clear, the sun was right, the bottom was visible about six feet below us, and the water was clear. They were fish, not monsters. I assumed they were sturgeon. If not, what were they?"

OTHER SIGHTINGS OF LARGE FISH have been more spectacular. An Associated Press item carried by several Montana newspapers reported that Dan Knight of Missoula, his wife, and four friends saw a superfish near Yellow Bay on August 20, 1983. Said Knight: "When we got about 30 yards away, it started moving and came out of the water. Then you could see it perfectly. I'm not exaggerating. We couldn't believe what we were seeing. It was 25 to 30 feet long. Its fin was about two feet out of the water and it was cutting the water like a shark."

Knight estimated that they watched the fish swim across the mouth of Yellow Bay for about four minutes. "That was no monster," he said, "just a big, big fish. The reason I think it was a sturgeon is because you could see the ridges and humps on its back and its scales."

MANY DISMISS THE SIGHTINGS OF SERPENTS and superfish as hoaxes, vivid imagination, or natural phenomena. Recently, skeptic Russ Kinney of Missoula wrote a letter describing his experiences: "I have never believed such a thing could exist without it coming ashore or eating someone, yet I have anguished over seeing it about 24 years ago. One evening while eating, I looked out into the lake about half a mile and saw what I thought was a black and shiny log. I looked away and thought, 'Why would a log be shiny?'

"When I looked back it was GONE. I spent the rest of the evening watching for it with binoculars, but to no avail. I have suffered mental stress as well as condemnation by others all these years for not watching it either swim away or dive.

"Last fall my stress was relieved. I looked in another place and there it was. While it was only 12 feet long 24 years before, it was now a full 20 feet long. I never took my eyes off it and worked my way over to a drawer and got the binoculars. THERE IT WAS: a tightly packed flock of coots about two feet wide and 20 feet long. I assume others who claimed to have seen the monster also saw coots."

Kinney also described a sighting of the monster made by his sister and her husband. They thought they saw the monster, but it turned out to be a horse swimming across the lake.

PAUL FUGLEBERG OF POLSON, monster expert and former editor of the *Flathead Courier*, has catalogued nearly 70 sightings of strange creatures on Flathead Lake dating from 1889 to 1983. According to Fugleberg, the phenomena can't be explained satisfactorily.

"There's something out there," says Fugleberg, "surprising people, frightening them. What it is I don't know. But I don't deny it's there because there have been so many credible witnesses, people whose word you just don't doubt."

Fugleberg has spent more time than anyone documenting sightings and pondering the existence of the Monster, but still lacks the one thing that would make it real for him.

"I've never seen one of these things. I'd sure like to see it. I've seen waves and shadows."

Many people who have seen the Monster are absolutely convinced that it does exist. Says George Cote of the two sightings he and his son, Neal, made: "I've caught bluefin tuna over 1,000 pounds in the ocean. I've seen sturgeon. I've been out on Flathead Lake over 300 times in the last 15 years, and I know what a submerged log looks like. I know what I saw. There's no doubt in my mind that it was a huge creature.

"We're fishermen, and some may think we are stretching the size of this thing, that it's getting bigger in our minds. This is no fish story."

Reports of the Monster continue to trickle in. Rachel Gratzer of the U.S. Air Force in Germany recently wrote of an experience she and her father had in the summer of 1985: "We were boating from Wild Horse Island to Melita Island when we noticed a whitecap on clear, almost glasslike water. We moved closer and saw a black-brown creature about 20 to 30 feet in length. About 10 seconds later, it disappeared and we never saw it again.

"There were many occasions when we heard of the Flathead Monster but never really believed in it," Gratzer continued. "Now, like many others, I think there is a monster swimming around in Flathead Lake."

What do you think?■

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